STOPPING WATER POLLUTION AT ITS SOURCE

MISA

Municipal/Industrial Strategy for Abatement

THE DEVELOPMENT DOCUMENT FOR THE EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

Environment Ontario

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Minister

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THE DEVELOPMENT DOCUMENT FOR THE EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

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TABLE OF CONTENTS

		PAGE
USE OF THE MISA SECTOR SPECIFIC MONITORING REGULATIONS WITH THE GENERAL REGULATION		1
FOREWORD		2
PART A -	**OVERVIEW OF THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR**	
I	INTRODUCTION	A-1
II	DEFINITION OF ORGANIC CHEMICAL MANUFACTURING (OCM)	A-1
III	HISTORICAL OVERVIEW OF ORGANIC CHEMICAL MANUFACTURING	A-1
IV	PRINCIPAL RAW MATERIALS	A-2
V	PROCESS CHEMISTRY	A-5
VI	WASTEWATER	A-6
VII	IN-PLANT CONTROLS	A-6
VIII	WASTEWATER TREATMENT	A-7
IX	THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR IN ONTARIO	A-8
X	SECTOR OVERVIEW	A-8
PART B -	**TECHNICAL RATIONALE FOR THE MONITORING REQUIREMENTS**	
I	INTRODUCTION	B-1
II	DEFINITION OF THE OCM SECTOR - STANDARD INDUSTRIAL CLASSIFICATION (SIC) SYSTEM	B-1
III	THE NEED FOR REGULATION	B-1
IV	THE U.S. EPA EXPERIENCE	B-3
V	THE MINISTRY/OCM SECTOR DIALOGUE	B-4
VI	APPROACHES TO ROUTINE MONITORING	B-5
VII	THE EFFLUENT-SPECIFIC MONITORING APPROACH	B-6
VIII	PARAMETERS FOR ROUTINE MONITORING	B-6
IX	DATABASES USED FOR PARAMETER SELECTION	B-7
X	CLASSIFICATION OF EFFLUENTS	B-8
XI	FLOW MEASUREMENT	B-8
XII	PARAMETER/FREQUENCY ASSIGNMENT - GENERAL RULES	B-9
XIII	PARAMETER/FREQUENCY ASSIGNMENT - SPECIFIC RULES	B-11
XIV	CHARACTERIZATION	B-21
XV	OPEN CHARACTERIZATION	B-22
XVI	TOXICITY TESTING	B-23
XVII	QUALITY ASSURANCE/QUALITY CONTROL	B-25
XVIII	ECONOMIC IMPLICATIONS OF THE REGULATION	B-26

REFERENCES 3

APPENDIX

Table 1 - Standard Industrial Classification (SIC) Codes for the Organic Chemical Manufacturing Sector 5

Table 2 - Effluent Monitoring Priority Pollutants List (EMPPL) (1987) 6

Table 3 - Organic Chemical Manufacturing Sector Conventional and Sector Priority Pollutant List 13

Table 4 - U.S. EPA BATEA Performance Data 17

Table 5 - Summary of the Parameter/Frequency Assignment Rules 19

Table 6 - Probability of Detecting at Least One Sample Above the Detection Limit 21

Table 7 - OCM Sector Plant Groupings for Characterization 22

PART C - THE EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR C-1

PART D - EXPLANATORY NOTES TO THE EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR D-1

USE OF THE MISA SECTOR SPECIFIC MONITORING REGULATIONS WITH THE GENERAL REGULATION

Under the MISA program, the effluent monitoring requirements for each of the nine industrial sectors are specified in two regulations - The General Effluent Monitoring Regulation (Ontario Regulation 695/88) and the relevant sector-specific effluent monitoring regulation.

The General Effluent Monitoring Regulation provides the technical principles which are common to all sectors. It covers the "how to" items such as sampling, chemical analysis, toxicity testing, flow measurement and reporting.

The sector-specific effluent monitoring regulation specifies the monitoring requirements for each direct discharger, such as the actual parameters to be monitored, the frequency of monitoring and the regulation in-force dates.

The General Effluent Monitoring Regulation, which must be used in conjunction with the sector-specific regulation, is published under separate cover. The same document also includes a discussion of the MISA approach to effluent monitoring.

The regulation described in this document is the sector-specific effluent monitoring regulation for the **Organic Chemical Manufacturing (OCM) Sector**.

FOREWORD

The Ministry of the Environment is developing the Municipal-Industrial Strategy for Abatement (MISA) program with an ultimate goal of virtual elimination of toxic contaminants from industrial and municipal discharges into Ontario's waterways.

Initially, under the MISA program, monitoring regulations will require direct dischargers in nine industrial sectors to monitor their effluents for specified parameters for a period of twelve months. The monitoring phase will be followed by effluent limits regulations which will establish discharge standards for each sector.

The purpose of this document is to provide background information on the development of the MISA effluent monitoring regulation for one of the nine industrial sectors - **the Organic Chemical Manufacturing (OCM) Sector.**

The pertinent information is set out in four sections covering the following topics:

- an overview of organic chemical manufacturing including descriptions of the OCM Sector plants
- an in-depth explanation of the technical rationale which led to the regulation in its present format
- the effluent monitoring regulation for the OCM Sector
- explanatory notes which provide an interpretation of the requirements of the regulation

PART A

OVERVIEW OF THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

PART A - OVERVIEW OF THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

I INTRODUCTION

The first part of this section serves as an introduction to the Organic Chemical Manufacturing Sector. It defines organic chemical manufacturing, provides a historical overview of the industry and describes general organic process chemistry including wastewater generation and treatment.

The section concludes with specific information on each of the plants making up the MISA Organic Chemical Manufacturing (OCM) Sector. Emphasis is placed on the unique features of each site and the potential impact of operations on the environment.

II DEFINITION OF ORGANIC CHEMICAL MANUFACTURING (OCM)

Organic chemical manufacturing (OCM) refers to the manufacture of chemicals based on carbon.

Carbon, almost alone among the elements, has the ability to unite with itself indefinitely to form long chain molecules. Moreover, its covalent bonding also makes carbon the basis for the formation of an extremely large number of compounds.

The organic chemical manufacturing industry, for the purposes of this Regulation, can be thought of as being made up of plants with three general classes of products:

- organic chemicals
- plastics
- synthetic fibres

III HISTORICAL OVERVIEW OF ORGANIC CHEMICAL MANUFACTURING

The development of organic chemistry as a separate branch of the broader field of chemistry is a relatively recent development, although typical organic compounds have been known and used for centuries.

The late development of organic chemistry was due to the fact that most organic compounds found in nature occur as complex mixtures. Methods for separation and isolation of the pure compounds have become available only during the past two or three centuries.

From the mid 19th century, the development of organic chemistry has been rapid. Coal tar wastes, generated in the production of coke in blast furnaces, served as the starting materials in the synthesis of the first coal tar dye. Subsequently, aromatic hydrocarbons (e.g., benzene, toluene and phenolics) were

isolated and produced commercially from coal-derived feedstocks as the value of such products was identified. Further recovery led to the manufacture of additional products, such as dyes, explosives and pharmaceuticals.

The growth of the organic chemical manufacturing industry was relatively rapid, due in part to the economic incentives realized by finding practical uses for the by-products and wastes of industrial processes. Chlorine which was a by-product in the production of caustic soda was reacted with benzene to produce chlorinated aromatics. The chlorinated aromatics, in turn, served as intermediates in the production of other more valuable commodities such as phenol and picric acid.

Man-made fibres and polymers were first produced from organic chemicals in the early 1900's with the introduction of rayon from cellulose and phenol-formaldehyde resins. Specialty chemicals such as surfactants, pesticides and aerosol propellants were later developed to meet commercial needs.

With the commercialization in the late 1930's of nylon by E.I. Du Pont de Nemours Ltd. and high pressure polyethylene by I.C.I. England, the modern era for organic chemicals and synthetic fibres had begun.

The Second World War provided a further impetus for the organic chemical manufacturing industry, especially the synthetic rubber sector. By the early 1950's, the discovery of stereospecific catalysts gave rise to new generations of plastics and elastomers. These included polypropylene, high density polyethylene and various ethylene/propylene and ethylene/propylene/diene rubbers.

An in-depth account of the origins of the global organic chemical manufacturing industry including its early beginnings in Germany is presented by P.H. Spitz in "Petrochemicals: The Rise of an Industry"(1).

The present spectrum of some of the end-products from the organic chemical manufacturing industry is shown in Figure 1.

IV PRINCIPAL RAW MATERIALS

As can be seen in Figure 1, approximately 90% of the chemical precursors used in organic chemical manufacturing are derived from petroleum and natural gas. A small portion of aromatic compounds is derived from coal.

The primary seven petrochemicals used for synthesis of organic chemicals include methane, ethylene, propylene, butane/butene, benzene, toluene, and ortho- and para- xylenes. The synthesized derivatives are in turn used as feedstocks for the synthesis of other derivatives. A typical list of organic chemicals derived from ethylene is shown in Figure 2.

Due to the diverse nature of the products and processes used, few plants in the industry are alike. In general, most plants utilize several of the basic feedstocks as well as several products from other organic chemical manufacturing industries.

Figure 1
Petrochemical Sources to End-Use Applications

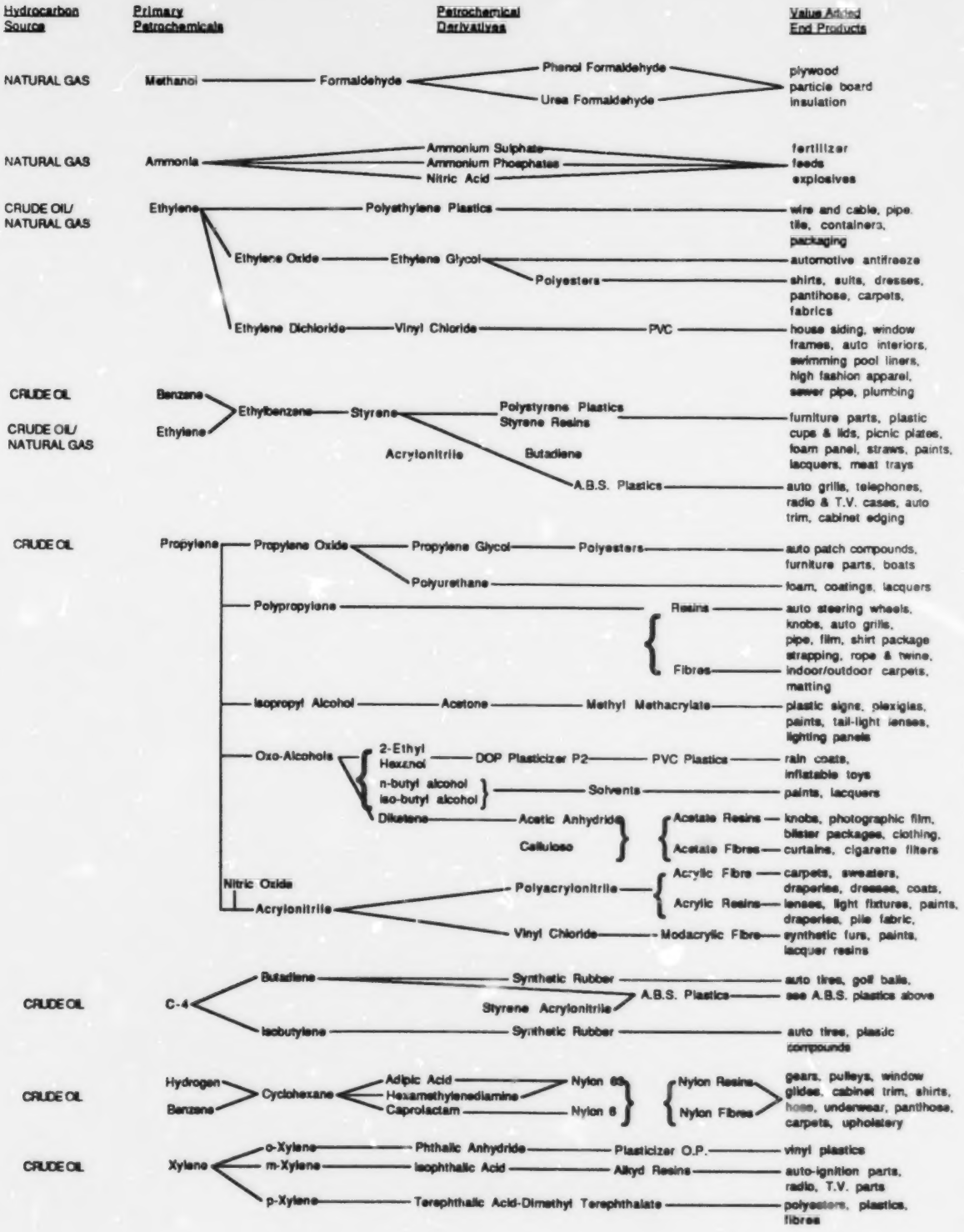
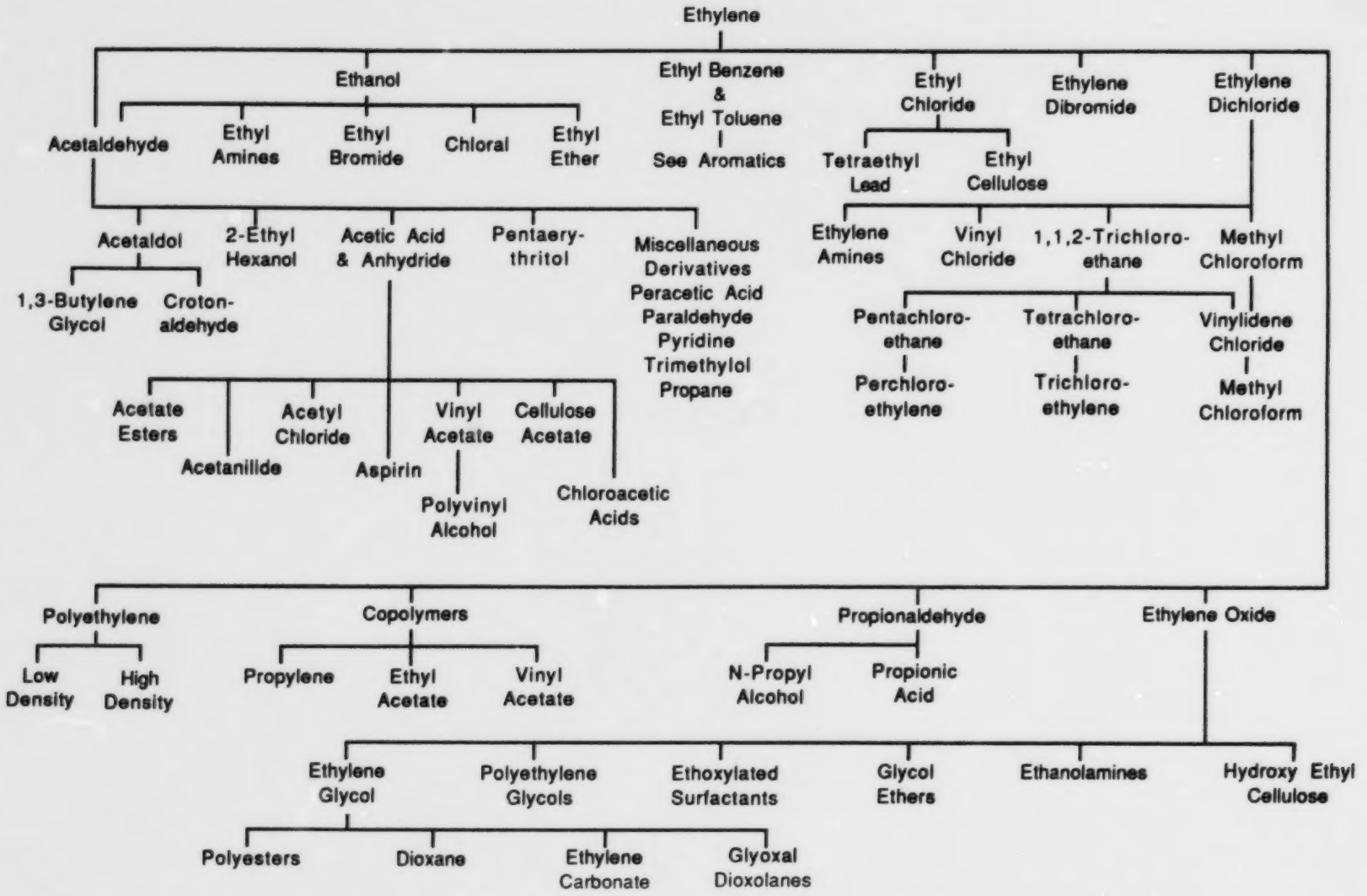


Figure 2
Organic Chemicals Derived from Ethylene



V PROCESS CHEMISTRY

Chemical reactions produce a mixture of products, raw materials and by-products. The physical state of the chemical reactants (solid, liquid or gas), presence of solvents or catalysts, the temperature and pressure within the reaction vessel and the configuration of process equipment will dictate the major reaction pathway.

Raw materials and useful by-products are generally recovered from the reaction mixture to increase process efficiency. However, it is often impossible to recover all of the by-products formed.

A typical organic chemical product is manufactured through a three-step process:

(1) combination of reactants under suitable conditions to yield a desired product

(2) separation of the product from the reaction matrix, and

(3) final purification of the product

A number of generic unit processes are employed to produce the desired product. Both physical and chemical processes are employed, often as a series of chemical reactions/processes. Some typical processes employed throughout the organic chemical manufacturing industry include the following:

- alkylation
- condensation
- dehydration
- distillation
- esterification
- extraction
- halogenation
- hydrogenation
- hydrolysis
- nitration
- oxidation
- polymerization
- pyrolysis

The organic chemical manufacturing industry is generally made up of a small number of very large plants and a large number of small, specialized plants. Large plants typically employ continuous operations due to the large volumes of chemicals produced. Batch processes are generally used for the production of small volume specialty chemicals. Continuous processes are generally more efficient than batch processes due to a more efficient usage of process reactants and minimization of water usage.

Organic chemical manufacturing plants which are vertically integrated typically produce a number of high volume chemicals using fewer basic unit processes. As an example, synthetic fibres are manufactured using polymerization processes in which simple organic chemicals are reacted to form long-chain polymers. Horizontally integrated industries, such as those which produce specialty chemicals, generally produce lower-volume products which are more complex and require a greater number of process steps.

VI WASTEWATER

The variation in raw materials and processes employed in the organic chemical manufacturing industry results in process wastewaters of varying composition. A wide variety and concentration of pollutants may be found in the wastewaters including both conventional and persistent toxic contaminants. Conventional pollutants which may be present in the wastewaters of the organic chemical manufacturing industries include acids, bases, suspended solids, oil and grease, organic carbon and nitrogen. Toxic pollutants which may be present include metals, phenols and chlorinated and polyaromatic hydrocarbons. The pollutants in the wastewater may originate from raw materials, reactants, products and by-products.

The discharge of conventional and toxic pollutants can be controlled through a combination of in-plant controls and wastewater treatment. Specific controls and treatment technologies will generally depend on the products and processes used.

VII IN-PLANT CONTROLS

In-plant controls are very cost-effective methods of limiting the discharge of pollutants through process modifications, chemical substitution and water reduction and recycling.

Process modifications include measures to improve the efficiency of the reaction thereby reducing the amount of pollutants discharged in the wastewaters. Recovery of by-products through physical treatment processes or recycling or through the control of spills from process or storage areas will also reduce losses. Additionally, changes to process equipment, such as the replacement of barometric condensers with surface condensers or the replacement of steam jet ejectors with vacuum pumps will further reduce the discharge of contaminants.

Chemical substitution involves the replacement of certain process chemicals known to be toxic and persistent with chemicals of lower toxicity or greater treatability. The replacement of one catalyst with another may increase process efficiency and reduce the toxicity of the effluent discharged.

Recycling water from building drains, scrubbers, vacuum seal discharges and surface runoff will reduce contaminant losses. Cooling water may be recycled and the process chemicals recovered and disposed of through other means. The reduction of water usage is also desirable as a cost consideration.

VIII WASTEWATER TREATMENT

Both biological and physical-chemical processes may be used to control the pollutants discharged in wastewater.

Biological treatment involves contacting the wastewater with microorganisms which metabolize the wastes for energy and synthesis of new cells. Both aerobic and anaerobic systems are used for biological treatment. Under aerobic conditions, carbon containing wastes are converted to carbon dioxide and water while under anaerobic conditions, methane and carbon dioxide are produced. Using both aerobic/anaerobic reactions in series, nitrogen containing wastes can be converted to nitrogen gas through nitrification/denitrification reactions.

Metals and some hydrocarbons are removed in biological processes by adsorption onto the biological flocs which in turn are removed from effluents by clarification or filtration. Specific methods of metals removal include activated carbon, ion exchange, precipitation, electrodialysis, electrolytic recovery and reverse osmosis.

Biological treatment technologies include activated sludge systems, extended aeration, rotating biological contactors, trickling filters and lagoons. The majority of both municipal and industrial applications use the activated sludge or extended aeration technology.

The conventional activated sludge system involves aeration of a suspended growth culture and wastewater in tanks or basins with about 6 to 12 hours holdup time. In extended aeration, the holdup times are extended to periods approaching 5 to 6 days. Extended aeration systems are capable of achieving high levels of priority pollutant removal.

Physical-chemical treatment technologies utilized by the industry include flow equalization, neutralization, oily water separation, sedimentation/clarification, dissolved air flotation, filtration, reduction, coagulation, flocculation, steam and air stripping, distillation and adsorption using activated carbon or ion exchange resins. Generally, these technologies are applied to recover products or by-products, to reduce loadings to a biological treatment plant or to remove pollutants for which biological treatment may be ineffective. Activated carbon has been used successfully in conjunction with aerobic treatment to remove difficult pollutants. However, activated carbon applications are limited by the high costs of both carbon and energy for reactivation. Physical-chemical treatment alone generally will not provide sufficient removal of pollutants from wastewater.

IX THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR IN ONTARIO

The organic chemical manufacturing industry in Canada is large and diverse, consisting of approximately one hundred and fifty plants. Sixty of the plants are located in Ontario with nineteen of them classified as direct dischargers and included in the OCM Sector for regulation under the MISA program. The nineteen OCM Sector plants are concentrated in five geographical areas of Ontario. Six of the plants are located along the St. Clair River in Sarnia's Chemical Valley. Four plants are located along the shore of Lake Ontario between Cobourg and Kingston while another five are situated along the St. Lawrence River between Maitland and Cornwall. Two plants are located in the Niagara-Fort Erie area and two in Central Ontario near Elmira and Orillia.

Approximately one third of the MISA OCM Sector plants currently use biological treatment on their process effluents. Physical-chemical treatment alone is used at another one third of the OCM Sector plants. The remaining plants discharge some process effluents directly to the receiving water without any form of treatment. The plants usually discharge their process effluents with cooling water or storm water runoff which dilute the contaminants.

Past and present studies by the Ministry and Environment Canada have identified two major areas of environmental concern related to discharges from OCM Sector plants. These have included the St. Clair River at Sarnia where significant levels of chlorinated and aromatic compounds continue to be discharged. The Cornwall area of the St. Lawrence River has also been named because of discharges of heavy metals, acids and bases.

X SECTOR OVERVIEW

An overview of each of the OCM Sector companies is provided in this section. Information such as the location of the plant site, number of employees, products and raw materials, processes and effluent treatment is provided. Effluent surveys conducted in the past by the Ontario Ministry of the Environment or Environment Canada are noted. The surveys indicated are special surveys which were conducted outside of routine abatement activities. An indication of the past and potential impacts of the effluents on the receiving environment is also provided.

B.F. GOODRICH CANADA INC., NIAGARA SITE

The B.F. Goodrich plant is located in Thorold on the Thorold Townline Road. The plant, employing 205 people, manufactures polyvinyl chloride (PVC) and PVC/polyvinyl acetate resins from monomers using two processes - emulsion and dispersion polymerization.

A facility for compounding PVC with plasticizers and stabilizers was started up in the summer of 1988. Both PVC resin and cubes of compound are produced. The emulsion process, used in the older unit, results in greater contamination of process wastewater due to the inherent nature of the process and the age of the plant. Wastewater from the emulsion process is steam-stripped in three tanks prior to biological treatment. The treated effluent is then routed to an aeration pond, followed by a polishing lagoon before being discharged to the Welland River through a single outfall.

The suspension process, used in the newer unit, uses a distillation column to recover vinyl chloride monomer from the effluent before discharging the wastewater to the common site aeration pond and polishing lagoon system.

PVC resins find use in the manufacture of clothing, automobile trim, piping, wire insulation, window frames, swimming pool liners and house siding. Intake water to the plant is pumped from the Welland River. The site makes use of cooling towers to minimize cooling water usage. Blowdown is routed through the biological treatment plant. The effluent flow in 1987 from the site averaged 2329 cubic metres/day.

Waste PVC and thickened biological sludge is dewatered in a reclaim pond with underdrains. The resulting leachate is directed to a valved-off leachate pond and batch discharged every 1-2 months to the Welland River.

Effluent surveys for conventional pollutants, metals and a limited number of priority pollutants and pesticides were conducted in 1981 and 1982 by the Ministry. Environment Canada carried out similar surveys also in 1981 and 1982. Since 1981, the effluent from the site has been monitored annually for conventional pollutants, priority pollutants and pesticides by the Ministry under the Niagara River Monitoring Information System (NIAMIS)(2).

Under the Ministry's Industrial Monitoring Information System (IMIS) program, the company currently monitors its effluent for flow, BOD5, ammonia, pH, phosphorus, total suspended solids, volatile suspended solids and vinyl chloride.

In March of 1988, B.F. Goodrich announced a $75 million expansion of its facility to double production capacity by 1990. Included will be an $11 million expansion of the wastewater treatment facilities.

BTL SPECIALTY RESINS, BELLEVILLE PLANT

BTL Specialty Resins, a division of Bakelite Thermosets Ltd., employs approximately 140 people on an 80-acre site situated along the Bay of Quinte at Belleville.

The primary products at the site are phenol-formaldehyde (P/F) resins in both liquid and solid form. Of the two raw materials, formaldehyde is made on site by oxidizing methanol. Hexamethylene tetramine, a cross-linking agent for the resins, is also produced on site from ammonia and formaldehyde.

Phenol-formaldehyde resins find wide end-uses in moulding compounds, electrical insulators and coatings.

Intake water at about 10000 cubic metres/day is pumped from the Bay of Quinte.

Process wastewaters from operating units are discharged to the Belleville municipal sewage treatment plant. Some process wastes from the resin plant are incinerated on site. Cooling water, storm water and yard runoff are discharged without treatment through two open ditches - East and West, to a marsh area bordering the Bay.

Process spills of phenol and formaldehyde are an ongoing concern.

Effluent surveys of the plant were undertaken in 1980/1981 by the Ministry and Environment Canada. Conventional pollutants, metals, phenolics and priority pollutants were targeted in these investigations. A detailed plant survey to determine the sources and the loadings of contaminants was initiated by the Ministry in mid-1988.

Under the IMIS program, the site currently monitors flow and phenols in its two discharges to the Bay of Quinte.

CANADIANOXY CHEMICALS LTD., THERMOSET DIVISION

CanadianOxy Chemicals Ltd., Thermoset Division, is a part of Canadian Occidental Petroleum Ltd. Approximately 40 people are employed at the plant in Fort Erie. It is the only plant in the Sector which operates 5 rather than 7 days per week.

The company manufactures phenol-formaldehyde (P/F) resins and moulding compounds in semi-continuous batches.

Raw materials used for P/F resins include nonyl phenol, phenol, cresol, formaldehyde and catalysts. The resins are used as binders in automotive products and for the manufacture of moulding products.

Intake water to the plant at about 115 cubic metres/day is obtained from the Town of Fort Erie. Use of cooling towers reduces the fresh water requirements for the site.

Water of reaction from the P/F resin kettles is distilled off, stored and shipped off-site for treatment or disposal. All other processes are dry. Cooling water from the P/F resin area is recycled through cooling towers. Miscellaneous non-contact cooling water from other areas of the plant and storm water are discharged without treatment through a single outfall to Frenchman's Creek and subsequently to the Niagara River.

The cooling water for the resin flaker belt which was a major source of phenol contamination in the plant effluent was closed-looped in February 1989.

An effluent survey was conducted in 1981/1982 by the Ministry and in 1985 by Environment Canada for conventionals, metals and priority pollutants. The Niagara River Toxics Committee produced a report on the industrial discharges to the Niagara River including those from CanadianOxy Chemicals Ltd.

Under the Niagara River Monitoring Information System (NIAMIS) (2), the Ministry has analyzed the company's effluent for conventional parameters and priority pollutants on an annual basis since 1981.

The site currently reports flow, BOD5, phenols and phosphorus under the IMIS program.

CELANESE CANADA INC., MILLHAVEN SITE

Celanese Canada Inc. is located about 20 kilometres west of Kingston on the shore of Lake Ontario. Approximately 800 people are employed at the plant.

Polyester staple fibre and industrial yarn are manufactured in a continuous process through the polymerization of ethylene glycol and terephthalic acid. The polymer is extruded into filaments which are then processed to produce staple and yarn. These products find uses in textiles, carpets and tire cords.

Intake water at about 13000 cubic metres/day is pumped from Lake Ontario. Three outfalls discharge effluents from the site.

Process effluents, some cooling water and effluent from the site sanitary treatment plant are treated in an activated sludge plant. The treatment plant effluent, cooling water and storm water are discharged through the centre outfall to Lake Ontario. East and west outfalls discharge cooling water and storm water to the lake. The west outfall discharges to the Lake by way of a small holdup pond.

An effluent survey of this plant conducted in 1981 by Environment Canada included monitoring for conventional and priority pollutants and metals. The Ministry performed preliminary characterization of the effluents in 1985.

Under the IMIS program, the site monitors flow, BOD5, COD and total suspended solids for its centre outfall.

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* Dowtherm is a registered trademark of Dow Chemical Canada Inc., for its biphenyl/diphenyl oxide heat transfer fluid.

CORNWALL CHEMICALS LIMITED, CORNWALL PLANT

Cornwall Chemicals Ltd. is owned by C-I-L Inc., in partnership with Akzo Chemicals Ltd. The plant is situated adjacent to the C-I-L chlor-alkali plant and the Stanchem inorganics packaging plant in Cornwall. Approximately 70 people are employed by Cornwall Chemicals.

Monitoring requirements for both the chlor-alkali and Stanchem plants will be specified under the Inorganic Chemical Sector Effluent Monitoring Regulation.

Natural gas and sulphur are converted into carbon disulphide at the plant in a continuous operation. A further reaction with chlorine produces carbon tetrachloride. The chemicals are sold as feedstocks to other industries.

Intake water to the plant at about 800 cubic metres/day is obtained mainly from the City of Cornwall. About 25% of the water requirements in winter are obtained from a deep well on the site. Two cooling towers help to reduce the fresh water requirements.

Process effluents from the manufacturing areas are neutralized and passed through a three stage settling pond prior to discharge with cooling tower blowdown and storm water to the Brookdale Avenue industrial sewer. The discharge from the plant mixes in the sewer with effluent from the other C-I-L plants and a paper mill prior to discharge to the St. Lawrence River.

Several studies in recent years have focused on the Cornwall area. An Environment Canada report entitled "Cornwall Point Source Survey 1980-1981" (3) presents the results obtained from studies of several Cornwall area plants including Cornwall Chemicals Ltd. A second report was published by the Ministry in February 1988 entitled "St. Lawrence River Investigations" (4).

Under the IMIS program Cornwall Chemicals began in early 1988 to monitor effluent flow, BOD5, COD, phosphorus, dissolved solids and total suspended solids.

COURTAULDS FIBRES CANADA (A DIVISION OF COURTAULDS FIBERS INC.)

Courtaulds Fibres Canada, formerly Courtaulds North America Inc., is located at the east end of Cornwall along the St. Lawrence River. The company employs about 350 people. Its operations at Cornwall date back to 1925.

Courtaulds Fibres produces rayon fibre and raw viscose. The raw viscose is piped directly to the Courtaulds Films plant for conversion to cellulose film.

The rayon fibre is produced by first reacting dissolving grade pulpwood with caustic and carbon disulphide to produce viscose. The raw viscose solution is filtered and aged and then extruded through spinnerets into sulphuric acid baths containing zinc salts to form rayon filaments. The rayon filaments are stretched, chopped into staple, washed, bleached and treated with finish before drying and baling as a final product.

The cleaning of the viscose filters results in a highly alkaline (pH 10-11) wastewater. The subsequent wash baths are the major sources of acid and zinc wastes in the wastewaters discharged.

Rayon fibre is used in the manufacture of clothing and non-woven products.

Two intake pumps at the St. Lawrence River provide process and cooling water to the plant at the rate of about 12000 cubic metres/day.

Process effluents, non-contact cooling water and storm water are discharged directly to the River through six outfalls in combination with effluents from the Courtaulds Films plant. These sewers include an acid sewer (with Courtaulds Films), a viscose/alkaline sewer (with Courtaulds Films) and a combined storm sewer. Effluents are also discharged directly to the River from the acid recovery system, tank car unloading area and from the Caravelle sewer.

Because of the large number of dischargers, including Courtaulds, attention has focused on the Cornwall area for many years. Courtaulds Fibres was issued a Control Order in 1977 that required a reduction in loadings of sulphuric acid, zinc, BOD5 and suspended solids. The Control Order also required the installation of extended diffuser outfalls.

The acid and viscose/alkaline sewers now discharge via diffuser-equipped outfalls. Modernization of the plant reduced sulphuric acid and BOD5 loadings. However, the loadings of BOD5 are still above the provincial objectives (4).

Several other effluent surveys have been conducted by both the Ministry and Environment Canada in order to monitor concentrations of conventional pollutants, metals and trace organics and their effect on the surrounding environment. Two reports were produced entitled "Cornwall Point Source Survey 1980-1981" (3) and "Assessment of Courtaulds' Effluent on the St. Lawrence River near Cornwall" (5).

Under the IMIS program, the Courtaulds site monitors flow, BOD5, COD, acidity, total suspended solids and zinc for the two major outfalls.

COURTAULDS FILMS CANADA (A DIVISION OF INTERNATIONAL PAINTS (CANADA) LIMITED)

Courtaulds Films, formerly BCL Canada Inc., is located adjacent to the Courtaulds Fibres plant and employs approximately 250 people.

Transparent cellulose film (cellophane) is produced in a continuous operation from viscose (a solution of cellulose xanthate in sodium hydroxide) purchased from Courtaulds Fibres Canada. The viscose is filtered, regenerated into cellulose film, passed through a series of chemical and wash baths including bleaching and softening, dried and subsequently coated with polyvinylidene chloride (PVDC).

The cellulose film is used primarily as a packaging material for the food industry.

The film coating operation, in its use of PVDC dissolved in toluene and tetrahydrofuran, is the main source of priority pollutants in the storm sewer.

Water pumped by Courtaulds Fibres from the St. Lawrence River is shared for process and some non-contact cooling water needs while well water is used solely for non-contact cooling of coating tower chill rolls. A total of four sewers discharge effluent from Courtaulds Films. Three of these sewers combine with sewers from Courtaulds Fibres prior to discharge to the River.

Cooling water and storm water runoff are discharged through a municipal storm sewer north of the site.

Process wastewaters from the acid baths are discharged to an "acid" sewer which is piped through Courtaulds Fibres Canada property and combined with a similar discharge from Courtaulds Fibres. A sulphide/alkaline sewer carries discharges from the sodium sulphide baths and is also combined with the Courtaulds Fibres alkaline sewer. The storm sewer which carries building drain water, cooling water and wash and bleach bath effluent passes through Courtaulds Fibres property directly to the river with only small additions from Courtaulds Fibres. None of the streams described above undergo any treatment.

Courtaulds Films Canada was issued a Control Order in 1977 to reduce BOD5, suspended solids and sulphuric acid loadings and to install extended diffuser outfalls. The extended diffusers were installed by Courtaulds Fibres Canada for the shared outfalls and the other requirements of the Control Order are being satisfied.

The Cornwall area has been the focus of several investigations by both the Ministry and Environment Canada. Conventional pollutants, metals and trace organics were investigated in 1980/1981. An EPS report entitled "Cornwall Point Source Survey 1980-1981" (3) presents the results of that survey.

The IMIS monitoring requirements consisting of flow, BOD5, COD, acidity, total suspended solids and zinc are reported by Courtaulds Films Canada.

DOMTAR INC., SPECIALTY CHEMICALS DIVISION, LONGFORD PLANT

The Specialty Chemicals Division of Domtar Inc. at Longford Mills on the shore of Lake St. John, north of Orillia, employs approximately 70 people in the batch production of detergents and detergent bases.

Non-ionic detergent ethoxylates are produced by reacting long-chain fatty acids, fatty alcohols and alkylated phenols with ethylene oxide. Reaction of the ethoxylates, fatty alcohols or alkyl benzenes with sulphur trioxide produces anionic detergents. Reactions of fatty acids with ethanolamines produces non-ionic alkanolamides. Cationic tallow amine ammonium chlorides are produced by reacting amines with alkyl chlorides.

The site pumps about 3000 cubic metres/day of water from Lake St. John.

Process effluents, boiler blowdown and storm water are directed to an activated sludge treatment plant with subsurface aeration.

Excess biological sludge is dewatered in a plate and frame press and used as a low grade fertilizer on land. Non-contact cooling water joins the treatment plant effluent and both are discharged through a single outfall to Lake St. John.

Lake water surveys were conducted by Domtar in 1973, 1975 and 1983. The latter survey was done jointly with the Ministry of Natural Resources. The site monitors flow, TOC, ammonia, nitrate, pH, phenols, phosphorus and total suspended solids under the IMIS program.

DOW CHEMICAL CANADA INC., SARNIA DIVISION

The Dow manufacturing complex is situated along the St. Clair River in the heart of "Chemical Valley". Operations first began at the site in 1942 when the Canadian Government asked the Dow Chemical Company to build a plant for the production of synthetic rubber.

After the war, Dow began to diversify into other product areas. Today the site occupies 185 hectares and employs about 1300 people in 13 individual plants.

The major products manufactured at the site include vinyl chloride monomer, propylene oxide, propylene glycols, polyglycols, chlorine, caustic soda, anhydrous hydrochloric acid, styrene, polystyrene, latex, ethylbenzene, chlorinated solvents, epoxy resins, and high density and low density polyethylene.

Two pump houses provide process and cooling water from the St. Clair River at a rate of about 730,000 cubic metres/day.

Effluents are discharged from the site through seven outfalls.

Process effluents from the propylene oxide and propylene oxide derivatives plants and contaminated water from propylene oxide derivatives, latex, chlor-alkali, styrene and high density polyethylene plants are treated in a secondary biological treatment plant.

Environmental impacts from Dow's operations were first noted in the late 1960's when the fishing industry in Lake St. Clair was closed down due to mercury contamination in fish. The source of the mercury was found to be the mercury cell chlor-alkali process used by Dow. The mercury cell units were subsequently replaced with the diaphragm cell process. The situation improved so that in the early 1980's the fishing industry in Lake St. Clair was reopened to a limited extent.

More recently, the August 1985 Dow spill of perchloroethylene into the St. Clair River and the related discovery of black tarry puddles on the river bottom near Dow resulted in daily headlines (6). The company spent about $1 million to clean up the river as a result of the spill.

In addition to cleaning up the puddles using divers and suction equipment, Dow installed a free phase collection system in each of the First Street sewers, a river front barrier to prevent off-site migration of surficial groundwater, a spill containment facility and blocked the 30-inch tile drain which was the source of ongoing perchloroethylene losses.

Dow also segregated its process water from uncontaminated cooling water for its chlorinated solvents plant and directed it to the Block 90 spill containment pond. Process water was also segregated from uncontaminated cooling water in the vinyl chloride monomer plant at the same time.

MISA pilot site investigations in 1986 of the St. Clair River (7) in the vicinity of Dow showed decreased perchloroethylene accumulations in juvenile fish since the 1985 spill. The 42" sewer was noted as a major source of both volatile and higher chlorinated hydrocarbons. However, a comparison with 1985 data indicated reductions on the order of 83% for total volatile loading and 82% for the higher chlorinated hydrocarbons associated with the Dow complex.

A subsequent report (8) indicated total loadings of perchloroethylene and carbon tetrachloride were reduced by 79% and 95% respectively between 1985 and 1986. Some low but consistent mercury losses were measured from the Dow 54" sewer.

Dow-supplied data for the three month period, September to November 1988, indicate reductions in total volatile compounds discharged of 97% when compared to the 1985 data.

A major study of the St. Clair River by Environment Canada in 1986 entitled the "Upper Great Lakes Connecting Channel Study" (UGLCCS) (9) indicated that Dow continued to be a point source discharger to the St. Clair River of hexachlorobenzene (HCB), octachlorostyrene (OCS), phenols, lead, zinc, mercury, copper, nickel, chlorides, TOC, arsenic, chromium, volatile organics and base neutral extractables (except for PAH's and phthalates).

The Dow site reports flow, TOC, total alkalinity, pH, phenols and total suspended solids for all seven of its outfalls under the IMIS program.

DU PONT CANADA INC., ST. CLAIR RIVER SITE

The St. Clair River site of Du Pont Canada Inc., located along the St. Clair River at Corunna began operations in 1959. There have been several expansions of the plant since that time. Approximately 260 people are currently employed at the site.

A complete range of low to high density linear polyethylene resins are manufactured using a low pressure cyclohexane solution process with ethylene and butene/octene. These resins find use in both flexible and rigid applications including piping, tile, containers and milk film bags.

Intake water for process and cooling is pumped from the St. Clair River at an average rate of about 46000 cubic metres/day. Process effluents, spent cooling water and storm water are passed through two ponds in series. A pellet skimming pond removes any polyethylene beads and a final skimming pond allows recovery of hydrocarbons prior to discharge through a single outfall to the river.

Environment Canada conducted an effluent survey of the St. Clair River area in 1979/1980. The 1986 UGLCCS study (9) by Environment Canada indicated that the site was a minor point source discharger to the St. Clair River of phenols, mercury, copper and nickel.

Under the IMIS program, the site monitors flow and phenols for its outfall.

DU PONT CANADA INC., KINGSTON SITE

The Kingston site of Du Pont Canada Inc. is located in Kingston Township along the shore of Lake Ontario. The site employs approximately 1500 people.

Nylon 66 is produced by reacting adipic acid with hexamethylene diamine. The majority of the nylon polymer is extruded into filaments. The bulk of the site operations involve the optimization of filament physical properties through heat stretching, twisting, bulking and combining the filaments into yarn. The fibres are also treated with fatty acids and natural oil spin finishes and fluorinated anti-soil chemicals. The final products include light textile, industrial and carpet yarns and nylon staple.

Nylon 66 is also cast into flake or pellets to be used in the production of nylon film and moulding resins.

Intake water is obtained from Lake Ontario at an average rate of about 73000 cubic metres/day.

The majority of process wastes are routed, with sanitary wastes, to a trickling filter for pretreatment prior to discharge to the Kingston Township Sanitary Treatment Plant. Process effluents from the staple and flake areas, cooling water and storm water are combined in a catch tank/skim pond prior to discharge to a dyked outfall lagoon with a culvert discharge to Cataraqui Bay. A service sewer containing cooling and storm waters also discharges to the lagoon, without any treatment.

The site's main environmental concern has been the small on-going loss of Dowtherm A* heat transfer fluid to Cataraqui Bay. The installation of the dyked outfall lagoon in 1970 has resulted in a significant reduction of Dowtherm A* in the Bay sediments.

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* Dowtherm A is a registered trademark of Dow Chemical Canada Inc., for its biphenyl/diphenyl ether heat transfer fluid.

The company has conducted regular biological surveys of Cataraqui Bay since 1966. Recent surveys indicate that the invertebrate community is under slight to moderate stress within the dyked area and under slight stress in the Bay. Monitoring and projects for further reduction of contaminants are on-going. The site monitors flow, TOC, Dowtherm A*, pH and phenols for both of its final outfalls under the IMIS program.

DU PONT CANADA INC., MAITLAND SITE

The Maitland Site is located along the St. Lawrence River about 100 km east of Kingston. Approximately 600 people are employed at the site.

In 1953, the site began production of adipic acid and hexamethylene diamine for polymerization into nylon 66 at the Du Pont Kingston plant. Today these two raw materials continue to be the major products at the site although the site has diversified into additional product areas.

The site currently manufacturers chlorofluorocarbons, spandex fibres, engineering polymers, dibasic acids, hydrochloric acid and hydrogen peroxide. Tetraethyl lead, a gasoline antiknock compound was produced at the site for over 20 years but was phased out in 1985.

Chlorofluorocarbons are used in refrigeration systems, as solvents in the computer industry and as blowing agents in making expanded cellular plastics such as egg cartons, meat trays and protective shipping materials. Spandex elastic yarns find applications in leotards, pantyhose and hockey uniforms. Nylon resin is compounded with elastomers to produce a tough engineering polymer for welder's helmets, bicycle wheels and skate guards.

A world scale, state-of-the-art, hydrogen peroxide plant was started up in 1987 with the purpose of supplying the pulp and paper industry with a bleaching agent.

The site intake water is pumped from the St. Lawrence River at an average rate of about 180000 cubic metres/day. About 98% of the total intake is used as once-through cooling water.

Process effluents are directed to an extended aeration biological treatment plant with nitrification and denitrification. Typically 95% of the carbonaceous and 80% to 95% of the nitrogenous wastes are removed by the biological treatment. The treatment plant effluent is combined with spent once-through cooling water in two of three detention ponds.

Spent once-through cooling water is discharged via a cribbed ditch to three detention ponds. The effluent from the ponds is discharged to the St. Lawrence River through two submerged outfalls.

Some process materials from barometric condensers, scrubbers, seal pots and building floor drains also end up in the cribbed ditch.

The site makes use of on-line spill and pH monitors on key streams to ensure early detection of any process spills. A second level of protection against spills impacting the river is provided by the three detention ponds with their oil skimmers and the ability to isolate the pond contents.

In 1983 the Ministry reported increased lead levels in fish in the St. Lawrence River near Maitland. The uptake was traced to the discharge of alkyl lead from the antiknock compound plant. However, with the shutdown of the plant in 1985, the ongoing impact on the environment was eliminated.

Effluent surveys were conducted by Environment Canada in 1982 and 1984. The company has also undertaken periodic surveys of both the site effluent and the river in the vicinity of the outfall.

A report (10) of a 1975 Ministry study of the impact of site discharges on the river reflected conditions prior to the full operation of the biological treatment plant.

A second Ministry report (4) covering the period, 1979 to 1982 was published in 1988. The report identified a sediment lead plume extending about 3 km downstream of the outfall. However, with the shutdown of the tetraethyl lead plant in 1985, the lead levels in the sediment were expected to decline.

Under the IMIS program, the site currently monitors flow, BOD5, TOC, Total Kjeldahl Nitrogen and total suspended solids for its discharge to the St. Lawrence River.

ESSO CHEMICAL CANADA, SARNIA CHEMICAL PLANT

Operations at the Sarnia Chemical Plant began in 1957 as part of the Imperial Oil Ltd. complex located along the St. Clair River in Sarnia's Chemical Valley. Approximately 645 people are employed by the chemicals operation.

A wide range of products are manufactured by the Sarnia Chemical Plant including polyvinyl chloride (PVC), high density and linear low density polyethylene, naphtha, lube oil additives, C5-C15 olefins and fuel additives.

Aromatics are also produced from feedstock supplied by the refinery while ethylene and propylene are produced from natural gas.

PVC formulations are used in the manufacture of clothing, automobile trim, piping, wire insulation, window frames, swimming pool liners and house siding. Polyethylene is used for consumer packaging, cable insulation, piping and tiles.

Intake water at about 33700 cubic metres/day is obtained from the Esso Petroleum refinery which has two pumphouses on the St. Clair River.

The Sarnia Chemical Plant has separate sewer systems for oily and clean waters. The clean water sewer receives PVC plant process water, polyethylene contact water, cooling tower blowdown and storm water. Some biological

sludge is added to the stream prior to the clean water impounding basin to reduce phenols. Contaminated or potentially contaminated water is passed through oil separators to the oily water impounding basin. The discharge is pumped through dual media sand-anthracite and carbon adsorption filters to the clean water impounding basin. The clean water basin discharge is pumped to the St. Clair River.

The 1986 Environment Canada (UGLCCS) survey (9) indicated that Esso Chemical was a point source discharger to the St. CLair River of vinyl chloride, TOC, zinc and arsenic.

Under the IMIS program, the plant reports flow, TOC, ammonia, pH, phenols, TSS, dissolved solids, solvent extractables and sulphide. The plant also reports the pass/fail results of monthly 96 hour rainbow trout acute lethality tests on its undiluted effluent.

ETHYL CANADA INC., SARNIA PLANT

The Ethyl Canada plant at Corunna is located south of the Shell refinery along the St. Clair River. It employs about 150 people.

Production of tetraethyl lead (TEL) from lead-sodium alloy and ethyl chloride began at the site in 1956. Since that time, the site has expanded production to include tetramethyl lead, ethyl chloride, diesel ignition improvers and aluminum alkyls.

Intake water to the plant at an average of 33300 cubic metres/day is supplied by Shell Canada which obtains its water from the St. Clair River.

Contaminated TEL wastewater is directed to a sludge pit for settling of lead solids. Effluent from the sludge pit is pH adjusted and treated with sodium borohydride to reduce alkyl lead to lead. The resulting lead particles are removed in a lamella settler and by filtration in a Hydromation filter. The resulting effluent is discharged to the plant sewer systems.

Process effluent from ethyl chloride production is neutralized in a limestone pit and discharged to the TEL sewer systems.

The process effluents, spent once-through cooling water and storm water are discharged through a single outfall to the St. Clair River.

An Environment Canada survey of the plant's effluent in 1984 found high levels of ethylene dichloride, ethylene dibromide and ethyl chloride. Ethylene dichloride production was subsequently discontinued in 1986 but it is now a purchased raw material for blending with TEL.

The 1986 Environment Canada (UGLCCS) survey (9) indicated that the plant was a point source discharger to the St. Clair River of polycyclic aromatic hydrocarbons and chlorides. It was also a source of total lead, ethyl chloride, ethylene dichloride and ethylene dibromide discharges to the St. Clair River.

The site monitors flow and total lead in its effluent under the IMIS program.

GE PLASTICS CANADA LTD., NORMAR PLANT (Formerly Borg-Warner (Canada) Limited)

The GE Plastics Canada Ltd., plant located at Cobourg on the shore of Lake Ontario reacts acrylonitrile, styrene and polybutadiene latex with peroxide initiators to produce ABS resins and intermediate latex. A subsequent operation compounds dry resins with a variety of pigments and additives to produce coloured pellets. Both operations employ a total of about 140 people at the site.

ABS has a wide range of applications including telephones, drain pipes, automobile trim, hand tools and computer housings.

Water for plant usage of about 2000 cubic metres/day is obtained from the town of Cobourg.

The site has both primary and secondary treatment for its wastewater. Process effluents from both the resins and compounding areas are screened and passed through two equalization ponds with a neutralization pit in between. After primary clarification, the effluent is directed to a biological treatment plant and then to a final clarifier. Contaminated cooling and storm water as well as yard runoff are passed through the biological treatment plant which discharges through a submerged outfall into Lake Ontario.

Some potential exists for a loss of ABS polymer to Lake Ontario in the event of breakage of the glass transfer lines.

The Ministry and Environment Canada have not conducted any recent surveys of the plant's effluents.

Under the IMIS program, the site currently monitors its discharge for flow, BOD5, COD, Total Kjeldahl Nitrogen, pH, phosphorus and total suspended solids.

NOVACOR CHEMICALS LTD., MOORE PLANT

Novacor Chemicals Ltd. operates the former Union Carbide Canada Ltd. plant located in Mooretown, south of Sarnia. The plant was built between 1974 and 1977 and went into full production in 1978. Current employment is about 240 people.

High density and low density polyethylenes are produced continuously at the site using low pressure and high pressure gas phase polymerization processes. Minor quantities of polymeric oils and waxes are also produced.

Polyethylene finds wide application in consumer packaging, piping and wire insulation.

Intake water at about 3000 cubic metres/day is provided by the Sarnia water supply system. The use of a cooling tower reduces the site's fresh water demands. The main use of the water is for non-contact cooling in heat exchangers and contact cooling for polymer on extrusion.

Spent cooling water, boiler and cooling tower blowdown and effluent from the on-site sanitary waste treatment plant are routed to a process wastewater pond for solids settling. The pond effluent is passed through a solids filter before discharge to the St Clair River through an extended outfall diffuser.

Storm water, excess contact cooling water from polymer extrusion and washdown water from areas where there is potential for contact with polyethylene are collected in two retention ponds with traps for polyethylene pellets. The retention ponds normally discharge to the process wastewater pond except in emergencies when the contents of the ponds may be released to Baby Creek.

The Environment Canada 1986 Draft Upper Great Lakes Connecting Channel Study report (9) did not list this plant as being of an environmental concern.

Under the IMIS program, the site monitors flow, TOC, Total Kjeldahl Nitrogen, pH, phosphorus, TSS, total dissolved solids and fish toxicity.

POLYSAR LIMITED, SARNIA SITE

Polysar's Sarnia manufacturing complex is located along the St. Clair River south of the city of Sarnia. The complex employs about 2000 people and is bordered by Esso Chemical/Imperial Oil Ltd., to the north and Dow Chemical Canada to the south.

Polysar was originally formed as Polymer Corporation Limited in 1943 to address the shortage of natural rubber which occurred during wartime. Today, Polysar produces a wide variety of synthetic rubbers including nitrile-butadiene, styrene-butadiene, polybutadiene, butyl and halobutyl rubbers.

In addition, at the Sarnia site, Polysar produces styrene and ethylbenzene and extracts isobutylene and butadiene from C4 fractions.

Intake water, averaging about 550000 cubic metres/day is obtained from the St. Clair River. Approximately 92% of the water is used in-house for process, once-through cooling, boiler feed water and cooling tower makeup requirements. The remaining 8% is distributed to neighbouring companies.

Four process wastewater streams from Butyl, Styrene and Polybutadiene facilities are treated at the source in the production unit. All other process water streams are treated in the site Biological Oxidation Wastewater Treatment Plant (BIOX), which has been in operation since 1983.

The BIOX Plant effluent is discharged to the St. Clair River via the Cole Drain. The Cole Drain, which originates upstream of the Polysar complex, flows through Polysar's property, discharging into the St. Clair River via a submerged extended outfall. Polysar discharges once-through cooling water and some storm water into the Cole Drain.

Polysar also treats dilute wastewater streams in its BIOX plant from two neighbouring small plants which are not owned by Polysar.

Polysar discharges effluent wastewater to the St. Clair River through seven outfalls. An additional five outfalls discharge storm water.
Surveys of Polysar's effluents were conducted in 1979/80 and in 1985 by Environment Canada.

The most recent effluent survey conducted by Environment Canada in 1986 (9) indicated that Polysar was a point source discharger to the St. Clair River of phenols, cyanide, oil and grease, nickel, cobalt, phosphorus, ammonia, TOC, polycyclic aromatic hydrocarbons, acid extractables and two volatile organics - benzene and chloromethane.

Under the IMIS program, the site reports flow, TOC, ammonia, pH, phenols, TSS and solvent extractables for five of its outfalls.

In April 1988, Polysar Limited announced a five year $20 million plan to modernize and to upgrade its facilities which impact on the environment.

ROHM AND HAAS CANADA INC., MORRISBURG PLANT

The Rohm and Haas site is located along the St. Lawrence River on the eastern outskirts of Morrisburg. The plant employs about 135 people.

Polymethylmethacrylate sheet (Plexiglas*) is manufactured at the site using a cell cast polymerization process and an extrusion process. Oil additives (Acryloid*) are also produced through polymerization of esters of longer chain alcohols. The Plexiglas* sheets are used for signs and lighting panels.

Intake water is obtained from the Municipality of Morrisburg at an average rate of 500 cubic metres/day.

The plant has no effluent treatment. Process streams from the oil additives plant pass through an oily water separator. Other process effluents are discharged with cooling water directly to the St. Lawrence River. Storm water is collected in a ditch on the property. A single outfall discharges the process effluents, cooling water and storm water to the river.

The Ministry conducted an effluent survey of priority pollutants in 1987. The company has carried out limited surveys for conventional pollutants since 1979.

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* Plexiglas and Acryloid are registered trademarks of Rohm and Haas Canada Inc.,

Routine monitoring under the IMIS program for COD, total suspended solids, total dissolved solids and phosphorus was started in November 1988.

UNIROYAL CHEMICAL LTD., ELMIRA PLANT

The Uniroyal Chemical plant, located beside the Canagagigue Creek in Elmira, employs approximately 400 people.

Batch processes produce a diverse range of specialty organic chemicals and polymers, including rubber chemicals, liquid urethane prepolymers, agricultural pesticide chemicals, antioxidants/antiozonants, water treatment chemicals and a synthetic oil stabilizer.

Intake water is obtained from municipal wells for cooling and process applications and from the Canagagigue Creek for steam generation feed water.

Process effluents are treated by wet air oxidation, dissolved air flotation, above ground mechanical aeration and activated carbon prior to discharge to the Elmira Sanitary Treatment Plant.

Once-through cooling water and storm water from yard access are discharged directly to Canagagigue Creek through eight outfalls. About 5000 cubic metres of water are discharged to the Creek per day.

A large number of surveys have been conducted in the area of the Uniroyal plant in recent years due to a historical problem of groundwater contamination.

Up to the present time, the site has not been required to provide monitoring data under the IMIS program.

PART B

TECHNICAL RATIONALE FOR THE MONITORING REQUIREMENTS

PART B - TECHNICAL RATIONALE FOR THE MONITORING REQUIREMENTS

I INTRODUCTION

The purpose of the technical rationale section is to explain the steps in the development of the OCM Effluent Monitoring Regulation.

The section provides background information on the regulation process, the options considered in arriving at the specific OCM Sector monitoring approach and the databases and criteria used for parameter and monitoring frequency selection.

II DEFINITION OF THE OCM SECTOR - STANDARD INDUSTRIAL CLASSIFICATION (SIC) SYSTEM

A simple definition of the OCM Sector is difficult to derive because of the complexity of the products and manufacturing processes used.

One approach is to use the Standard Industrial Classification (SIC) codes originally established in Canada for data gathering purposes by Statistics Canada (11). These codes classify establishments by type of activity and may at best be somewhat arbitrary and perhaps technically ambiguous. Nevertheless, manufacturing sites discharging directly to surface watercourses under the SIC codes shown in Table 1 of the Appendix were eligible for inclusion in the OCM Sector for the purposes of the MISA regulations.

The SIC codes used to define the organic chemical manufacturing industry in the U.S. (12) are also shown in Table 1 of the Appendix.

III THE NEED FOR REGULATION

Currently, the Organic Chemical Manufacturing (OCM) Sector plants monitor and report only certain standard parameters and conventional pollutants under the Ministry of the Environment's Industrial Monitoring Information System (IMIS).

The reportable data include effluent flow and may include pH, BOD5, COD, TOC, DOC, nitrogen (as NH3, NH4, NO3, or TKN), total phosphorus, total suspended solids (TSS), total dissolved solids (TDS), volatile suspended solids (VSS), phenols, sulphides, selected metals and a very few indicator organic compounds. On average, less than half of the above list is reported at a given plant site.

Site specific monthly average IMIS data are published by the Ministry in its annual report entitled "Report on the Industrial Direct Discharges in Ontario" (13). The IMIS data are reported to the Ministry on a voluntary basis.

Requirements for some of the standard parameters and conventional pollutants reported under IMIS are imposed by Control Orders or Requirements for Direction, Certificates of Approval or Federal Regulations and Guidelines. Ministry guidelines are taken from various sources including Provincial Water Quality Objectives (PWQO) and previously published guidelines for industrial sectors.

The Ministry water management guidelines are summarized in the publication entitled "Water Management: Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment" (14), referred to as the Blue Book. Provincial Water Quality Objectives (PWQOs) are currently available for a total of 74 pollutants including 51 EMPPL substances. It is the goal of the Ministry to:

- establish PWQO or Guidelines for all of the EMPPL substances that possess the potential for moderate to high aquatic environmental damage

- assemble the available aquatic toxicological and other appropriate information for the remaining EMPPL substances, and maintain the capability to set Provincial Water Quality Guidelines for such substances on demand.

There are currently no regulations for specific, toxic and persistent pollutants, generally termed "priority pollutants". In fact, there exists only a very limited data base on the concentrations and loadings of these priority pollutants being discharged into Ontario's waterways. Some sector plants have virtually no data on the concentration of these pollutants in their effluents while others, especially those in the St. Clair River region, have a limited data base generated from one time surveys of short duration by either the Ministry or Environment Canada. A few companies have data on their effluents from surveys done on their behalf by contract laboratories.

Clearly, there is a need for a comprehensive long-term data base on the discharges of priority pollutants from the OCM Sector plants. The MISA effluent monitoring regulation for the OCM Sector will provide this data base.

The effluent limits regulation will be developed for the OCM Sector on the basis of the monitoring data base in conjunction with data on Best Available Technology Economically Achievable (BATEA) and Ministry water quality objectives. Because the priority pollutants are amenable to treatment through the use of available technology, the effluent limits regulation will ensure the required technology is put in place to virtually eliminate the discharge of toxic pollutants.

IV THE U.S. EPA EXPERIENCE

The U.S. EPA, after 13 years in the making, has published its effluent limitations guidelines for the Organic Chemicals, Plastics and Synthetic Fibres (OCPSF) Industry in the November 5, 1987 Federal Register (15).

Under these guidelines, two technology-based subcategories were established for "Best Available Technology Economically Achievable" (BATEA) effluent limits:

1) direct discharge point source with end of pipe biological treatment,
2) direct discharge point source with in-plant physical-chemical treatment.

A total of 63 toxic pollutants were limited for subcategory 1 and a slightly shorter list of 59 of the same pollutants for subcategory 2.

In developing its effluent limitations guidelines and standards for toxic pollutants, EPA originally addressed a list of 126 toxic pollutants, referred to as the priority pollutants list, that was developed in the late 1970s (16). In the subsequent rule-making process, EPA eliminated 26 toxic pollutants from this list because they were not produced nor used as raw materials in the U.S. OCPSF industry. An additional 33 compounds were eliminated for one of the following reasons:

- not detected by analytical methods available
- detected in a small number of sources and uniquely related to these sources
- effectively controlled by technologies upon which are based other effluent limitations
- present in trace amounts, neither causing nor likely to cause toxic effects

Finally, the EPA reserved from the guidelines under BATEA, four toxic pollutants for subcategory 1 and eight toxic pollutants for subcategory 2 to arrive at the list of pollutants to be limited.

Seven subcategories of plants were established for limiting three conventional pollutants, BOD5, pH and total suspended solids (TSS) on the basis of "Best Practicable Control Technology Currently Available" (BPT).

Throughout the technical development of its effluent limitations guidelines dating back to 1974, the EPA was plagued with legal challenges. The EPA originally promulgated effluent limitations guidelines and standards for the OCPSF industry in 1974.

However, as a result of successful court challenges, the EPA in 1976 withdrew or had remanded virtually all of the regulations except for butadiene manufacture regulations for the organic chemical manufacturing industry and pH regulations for the plastics and synthetic fibres industry.

Several environmental groups sued the EPA in 1976 (including the Natural Resources Defense Council Inc.) because it was unable to meet many of the deadlines for promulgating effluent limitations guidelines and standards as set out in the 1972 Clean Water Act.

In settling the lawsuit, EPA executed a Settlement Agreement by which it was required to promulgate BATEA effluent limitations guidelines and pretreatment standards for a variety of major industries including the OCPSF industry. Many of the basic elements of the Settlement Agreement were incorporated into the Clean Water Act of 1977. With the withdrawal/suspension of the national regulations in 1976, EPA initiated studies and data gathering to obtain a basis for issuing new effluent limitations guidelines and standards.

Initial EPA regulatory strategy between 1976 and 1981 focussed on limits based on mass loadings. By 1981, however, because of the lack of resources, EPA adopted a concentration-based end-of-pipe limitation strategy for process wastewater only.

On March 21, 1983, EPA proposed an application of BPT to control BOD5, pH and TSS and BATEA to control up to 44 priority pollutants. Following additional information gathering and extensive public and industry comments, EPA published numerous changes in post-proposal notices of availability of information on July 17, 1985 (17), October 11, 1985 (18) and December 8, 1986 (19). The final regulations were published on November 5, 1987.

In reviewing the U.S. EPA rulemaking process, it became clear that a lack of quality data was the single most troublesome aspect of the process. EPA had to continually undertake additional studies in response to industry criticism of its database and its data editing rules.

To avoid the U.S. EPA problems, the MISA program took the approach at the outset of requiring all of the companies to be regulated to provide twelve months of comprehensive monitoring data on each of its final effluent streams. The data are to be obtained under a formal monitoring regulation which rigidly specifies quality assurance/quality control procedures, parameters for analysis and statistically-based analysis frequencies. The future MISA effluent limits regulation will then be based on this database.

V THE MINISTRY/OCM SECTOR DIALOGUE

The Ministry adopted an open consultative process both with industry and the public in developing the OCM Effluent Monitoring Regulation. Input was also available in the Regulation formulating process through the MISA Advisory Committee (MAC). Members of the committee were appointed by the Minister on the basis of their knowledge, concern and expertise in matters dealing with the environment.

A Joint Technical Committee (JTC) consisting of industry, Environment Canada and Ministry representatives served as the means for reaching consensus. A member of the MISA Advisory Committee also took part in the JTC discussions.

Agreement was reached with industry on principles which were to serve as general guidelines for the monitoring regulation. A multi-discipline group of Ministry/Environment Canada experts developed the general rationale for the site-specific monitoring requirements. A joint Ministry/Industry Regulation Writing team then produced the Regulation text for review by the JTC.

On the basis of the rationale and the databases available to the Ministry, the site-specific monitoring requirements were drawn up. The specific monitoring requirements were then reviewed with each plant site and modified where required.

VI APPROACHES TO ROUTINE MONITORING

The simplest monitoring approach both for implementation and regulation would have been to have a uniform requirement for all of the plant sites in the Sector. Although the OCM Sector in Ontario is made up of only nineteen plant sites, the sites produce a broad range of products (polyethylene to chlorinated hydrocarbons) and vary in size and complexity. Sites range from small, single product locations such as Novacor to large complexes such as Dow Chemical, manufacturing more than 20 products. Based on these conditions, monitoring requirements that would be all-encompassing and yet would be equitable for the smallest plant site could not be established.

Subcategorization of the plants according to some common attributes such as process chemistry, raw and treated wastewater characteristics or other plant-specific factors so that a uniform monitoring schedule could be set for a given subcategory was the next logical approach. Subcategorization can be a useful and efficient method of grouping plants to reduce the number and complexity of monitoring schedules while at the same time allowing some specificity. Subcategorization schemes considered included grouping by:

- generic process
- product
- treatment
- effluent contaminants
- geographical location
- large complexes/small plants
- polymer/non-polymer
- chlorinated/non-chlorinated organics/resins/fibres
- thermosets/thermoplastics/fibres/organics
- U.S. EPA seven subcategory scheme for BPT

The subcategorization of the diverse and complex plants into the above homogeneous groups was deemed to be inequitable or impractical. The small number of plants and the inability to deal with multi-process/product sites which produce products in virtually all of the subcategories doomed the subcategorization approach.

In the end, it was concluded that the most cost effective and practical monitoring approach would be through effluent-specific schedules for each plant site.

VII THE EFFLUENT-SPECIFIC MONITORING APPROACH

For each plant site in the OCM Sector, effluent-specific monitoring schedules were developed. Conventional as well as priority pollutants were assigned for monitoring on the basis of their presence and their concentrations in the respective site effluents as determined from historical and current monitoring data available to the Ministry. In addition, supplemental data on raw materials, by-products and products were also used for parameter assignments. Thus, in keeping with the diversity of the plants in the sector, the routine monitoring requirements for specific parameters would be different for each effluent but would reflect the high probability of finding those parameters in that effluent.

Included in the effluent-specific monitoring schedules were requirements for toxicity testing using both the fish (Rainbow trout) and Daphnia magna acute lethality toxicity tests on all final discharges from OCM Sector plants.

VIII PARAMETERS FOR ROUTINE MONITORING

The priority pollutants assigned for routine monitoring of specific effluents were obtained from the OCM Sector List. This list is a subset of the Ontario Effluent Monitoring Priority Pollutants List (EMPPL).

The derivation of the EMPPL is fully documented in a Ministry report dated July 1988 (20). The EMPPL includes chemicals detected in Ontario municipal and industrial effluents and Ontario's waterways which pose a hazard to the receiving environment because of their toxicity and persistence. The potential presence of a chemical based on use and manufacturing data could also have placed it on EMPPL.

With the release of "The Effluent Monitoring Priority Pollutants List - 1988 Update (21) in March 1989, the current EMPPL contains 266 chemicals. This total includes the original 179 parameters from the 1987 EMPPL and an additional 87 parameters from the 1988 EMPPL update. The additional parameters were assessed for hazard under the same criteria as the original EMPPL compounds.

Of the 266 chemicals on the current EMPPL, only 141 have validated analytical protocols and 137 of these are on the OCM Sector List.

Four parameters, lithium, strontium, uranium and 4,5-dichloroguaiacol are excluded because they are not "indigenous" to the Sector. No other editing of the EMPPL has taken place to arrive at the OCM Sector List.

As new chemicals are identified in Ontario effluents and waterways, they will be assessed under the EMPPL criteria on an ongoing basis and, if warranted, placed on the EMPPL.

Table 2 in the Appendix lists all of the 266 chemicals on the current EMPPL. Chemicals with no validated analytical test protocols are shown in bold print in the table.

In addition to the priority pollutants on the OCM Sector List, monitoring under the regulation also includes conventional pollutants. Table 3 in the Appendix shows the conventional pollutants and the OCM Sector List priority pollutants arranged by analytical test groups. The two groups of pollutants form the basis for monitoring in the OCM Sector.

Once the routine monitoring parameters were decided upon, a frequency of monitoring had to be developed. On the basis of the end use of the data, a comprehensive rationale was developed to provide rules for the assignment of the OCM Sector parameters to daily, thrice weekly, weekly and monthly monitoring categories. The general and specific parameter/frequency assignment rules are discussed in sections XII and XIII.

To make the concept of effluent-specific monitoring workable in the regulation, a priori information on chemicals found or likely to be found in specific effluents was needed. To provide this monitoring database, a pre-regulation effluent characterization program for each plant site in the sector was agreed upon by the Ministry and the plants.

IX DATABASES USED FOR PARAMETER SELECTION

The major source of information on the presence and concentration of conventional pollutants and the OCM Sector List chemicals in the Sector effluents was the pre-regulation effluent characterization data. Each site analyzed many of its effluent streams for four 24 hour periods for the U.S. EPA 126 priority pollutants list and standard conventional parameters. Most plant sites also monitored their intake water for the same list of parameters. Use was made of the EPA priority pollutants list because the EMPPL was not available at the start of the pre-regulation characterization program. The data were collected in the period from December 1986 to August 1987.

The Ministry also obtained its own 24 hour composite samples as part of the pre-regulation program on one of the days that each plant site was collecting its pre-regulation samples. In addition to its comprehensive analysis for conventionals, metals and organics, the Ministry ran open characterization (gas chromatographic/mass spectrometric analysis) analyses on the samples to identify compounds not currently on the EMPPL. A limited number of companies in the Sector also provided open characterization of their effluents, but at a lower level of accuracy.

In response to a Ministry questionnaire (22), the Sector companies also provided, as part of the pre-regulation program, comprehensive site data on operations including raw material and product lists, wastewater treatment and current monitoring programs.

The pre-regulation monitoring and raw material usage data was combined with additional databases including:

- IMIS (Industrial Monitoring Information System)
- NIAMIS (Niagara River Monitoring Information System)
- pilot site studies (documented in the St. Clair River MISA Pilot

Site Investigation - November 1987; St. Lawrence River Environmental Investigations - February 1988)
- MOE historical survey data (1980 to present)
- MOE regional reports;
- Environment Canada/U.S. EPA Priority Pollutant Survey (i.e. Upper Great Lakes Connecting Channel Study (UGLCCS) (Draft))
- company submitted monitoring and site operations data
- U.S. EPA master process file (list of contaminants by generic processes) (23)
- best professional judgement (BPJ) based on knowledge of process chemistry, products, by-products, catalysts and raw materials for each site

X CLASSIFICATION OF EFFLUENTS

Unlike the Petroleum Refining Sector where process wastes are segregated and biologically treated at each of the plants, the OCM Sector has many unsegregated streams where process effluents are mixed with spent once-through cooling water before being discharged to the environment. This blend of process and cooling water was defined as a combined effluent stream.

The effluent streams in the OCM sector were placed in one of the following classifications:

- process effluents
- combined effluents
- batch discharges
- once-through cooling water
- storm water
- waste disposal site effluent
- emergency overflows

In addition, process effluent, combined effluent and batch discharge effluent streams which entered a watercourse directly were deemed as final discharge streams for the purpose of specifying continuous monitoring of some key parameters and for toxicity testing.

XI FLOW MEASUREMENT

Process effluents, combined effluents and batch discharges have the greatest potential for impacting the environment and as such, for the purposes of the monitoring frequencies, were treated identically, all having daily, thrice weekly, weekly and monthly monitoring requirements. The only difference between the two stream types for monitoring purposes was the softening of the flow accuracy requirements from $\pm$7% for process effluents to $\pm$20% for combined effluents and batch discharges. The process flow measurement accuracy requirement was further broken down to be $\pm$5% of the actual flow for the primary device and $\pm$2% of full scale flow for the secondary flow measuring device.

It was recognized that a flow measurement device operated at less than full scale could have a flow error higher than the specified ± 7% and still fall within the specification at full scale. In recognition of this fact, currently installed flow measurement devices on process effluents capable of ±15% accuracy over the operating range were deemed to be acceptable. New devices were required to meet the specified ±7% at full scale.

The rationale for the allowance of ±20% for combined effluents is reflected in the fact that these streams streams generally have a very large once-through cooling water component and no in-place flow measurement. The ±20% accuracy requirement would allow the use of flow estimation and avoid costly installation of flow devices on streams which in all likelihood would, at the end of the monitoring regulation, be segregated into separate process streams routed for treatment and much larger once-through cooling water streams only requiring flow measurement accuracy of ±20%.

XII PARAMETER/FREQUENCY ASSIGNMENT - GENERAL RULES

Four basic frequencies of routine monitoring are required in the OCM Regulation - daily, thrice weekly, weekly and monthly. Continuous monitoring is the stated preferred method of daily monitoring at final discharge sampling points for 3 parameters - pH, DOC and specific conductance.

The lowest frequency of routine monitoring, once per month, is specified for once-through cooling water, storm water and waste disposal site effluent.

Once-through cooling water is designed not to contact process and therefore should have virtually no impact on the environment. Monthly monitoring is intended for the detection of long-term leaks. Storm water, because of the intermittent nature of its discharge and relatively low volume, also did not warrant more frequent monitoring. Similarly, waste disposal site effluent is storm event driven so that monthly monitoring appeared adequate. Emergency overflows are to be monitored at the time of discharge.

The development of the effluent-specific monitoring schedules was based on the following general rules:

* the monitoring frequency for a given parameter is a function of parameter type, concentration and stream classification

* all sites must monitor for a set of core parameters on all effluents, i.e. pH, DOC, specific conductance, TSS, total phosphorus and oil and grease

  - the core parameters would reflect the general minimum level of control at the plants and would be useful for plant comparisons
  - the diversity of the Sector precluded the use of any of the priority pollutants as sector-wide core parameters

* at all final discharge sampling points pH, DOC and specific conductance must be monitored. Continuous on-line analysis is preferred

  - a continuous record of general site and control performance and uninterrupted real time information of general plant effluent impacts will be available

* sites with biological treatment facilities must monitor for volatile suspended solids (VSS), total phosphorus and nitrogen (TKN, NH_3, Nitrates + Nitrites)

  - the parameters are indicators of treatment plant performance

* if one member of an analytical test group was detected above the Ministry analytical method detection limit (MDL), the whole test group was included for monthly monitoring

  - a conservative approach was adopted to ensure as comprehensive a database for monitoring as possible

  - analytical test groups comprise similar or homologous compounds so that the presence of one member is quite likely an indicator that other group members could be present

* all additional parameters (both conventional and from the OCM Sector List) were assigned on a site and effluent-specific basis

  - priority pollutants found at concentrations above recognized long term median values (shown in Table 4 of the Appendix from U.S. facilities with BATEA currently in place) were monitored at higher frequencies than those with concentrations below the long term medians (the data in Table 4 does not necessarily reflect any future limit values for the OCM Sector)

* selection of parameters for monitoring for effluent streams other than process and combined effluents reflected process chemical usage in the stream source areas

* when assigning monitoring frequencies consideration was given to parameters when found in the intake water at the same levels as in the effluent when best professional judgement indicated that the parameters were not produced at the site

  - a plant site was not required to monitor at a high frequency for compounds which passed through from the intake water

* frequency reductions for key parameters under existing requirements or guidelines were generally avoided

  - sites currently carrying out monitoring for key chemicals on the basis of long term plant historical needs maintained those frequencies

* consideration was given for process changes since generation of any prior data

  - changes in process operations, raw materials and catalysts since the generation of previous monitoring data might override the need for monitoring of a particular parameter if it was no longer being used or produced

* best professional judgement was used for inclusion of raw materials and products in monitoring schedules based on high levels of use, even if none were found in the effluents above MDL

* best professional judgement was used for increasing frequencies above baseline requirements for special situations

  - a company treating third party wastes in a biological treatment plant would have a more stringent monitoring requirement

These general rules are summarized in Table 5 of the Appendix.

XIII PARAMETER/FREQUENCY ASSIGNMENT - SPECIFIC RULES

A) PROCESS, COMBINED AND BATCH DISCHARGE EFFLUENTS (INCLUDING FINAL DISCHARGES)

DAILY - pH, Dissolved Organic Carbon (DOC), Specific conductance, Volatiles Suspended Solids (VSS)

Continuous on-line analysis for pH, DOC and specific conductance is the preferred method of monitoring at all final discharges. Final discharges are defined as process effluents, combined effluents and batch discharge effluent streams discharging directly to a surface watercourse.

The continuous record would ensure that short term spills with their severe environmental potential did not go undetected. Average concentration levels do not give a true indication of instantaneous discharges and the damage to the environment they can cause.

On-line instrumentation will:

- measure short term spikes-shock loads
- allow determination of effluent variability by providing a clear picture of the variation of the recorded parameters with time
- address the possibility of shock loads versus addressing average concentrations
- provide shorter time lag between sampling and analysis than in manual sampling
- eliminate problems resulting from storage of samples
- allow the combination of automatic monitoring systems with an alarm system that will give advance warning when a high concentration of an undesirable parameter occurs

A provision in the Regulation allows the taking of composite samples for all three parameters instead of using on-line analysis.

Effluents from biological treatment plants will require monitoring for volatile suspended solids (VSS).

All process effluent, combined effluent and batch discharge effluent streams that do not discharge directly to a watercourse require daily analysis for pH, and specific conductance. Typically these streams discharge to other process effluent, combined effluent or once-through cooling water effluent streams on the site.

Daily parameter concentrations when multiplied by flow will provide daily loadings. These will be used to provide an estimate of operational variability and to establish the daily versus monthly variability to establish future daily limits in relation to monthly limits.

The reasons for selecting the monitoring parameters and a short description of what is measured under each test are summarized in point form.

<u>pH</u>

* a measure of the hydrogen ion concentration
* a fundamental parameter indicating the acidity level in an effluent
* pH and pH changes may alter the toxicity of many materials to aquatic life
* pH may impact the availability of nutrients for plants
* low and high pH values may cause corrosion and may make soluble metals from sludges and bottom sediments
* PWQO require pH to fall within the range of 6.5 - 9.5 (receiving waters)

<u>Dissolved Organic Carbon (DOC)</u>

* a measure of overall soluble organic carbon loading to the environment
* degradation of large amounts of organic matter in the receiving water causes depletion of the dissolved oxygen concentration impacting aquatic organisms and potentially producing septic conditions
* advantage of a much lower detection limit at 0.5 mg/L over total organic carbon (TOC) at 5.0 mg/L
* more likely to reflect trace organics than TOC, BOD5 or COD

* BOD5,

  - measures only the easily biodegradable organic carbon but may also measure oxidizable nitrogen

  - simulates the effect a waste will have on dissolved oxygen in the receiving waters

  - has a long incubation time (5 days) and is sensitive to seed acclimation, dilution, pH, temperature and toxic substances

* COD,

  - has a relatively high MDL of 10 mg/L

  - also measures inorganic substances such as sulphides, sulphites, nitrites and metals; mercuric sulphate used to eliminate chloride interferences creates a disposal problem; potassium dichromate reagent may initiate violent reactions in some samples

Specific Conductance

* indicator of the presence of dissolved inorganic salts which can impact aquatic organisms

Volatile Suspended Solids (VSS)

* measure of the organic biological floc associated with biological treatment systems

* measure of the performance of the separation equipment (clarifier or dissolved air flotation) used in removing organic solids in biological treatment systems

* biological floc can be a carrier by adsorption for metals and the less volatile organics such as the polyaromatic hydrocarbons (PAH)

* a component of total suspended solids (TSS)

THRICE WEEKLY

The thrice weekly frequency was chosen to provide twelve data points for calculating monthly averages for both conventional and priority pollutants.

In all cases for the same mean and standard deviation, the 95th percentile confidence limits will be narrowed about the mean with increasing sample size i.e. larger sample sizes yield less variable estimates of the mean.

It is in the interest of all that limits be based on a large representative database with good QA/QC standards.

The thrice weekly monitoring data will be used to:

- calculate monthly loadings and concentrations
- provide a record of parameter variability including manufacturing process load variations, treatment plant upsets and spills
- establish a basis of comparison for parameters monitored at other frequencies
- aid in identifying parameters that require control and point to appropriate treatment technology
- provide a basis for comparison of plants within the sector
- establish a basis for inter-sector comparison of loadings for these parameters
- aid in identifying well-operated plants which consistently control toxic contaminants and which could be considered as benchmarks for designation of BATEA technologies
- establish the performance of plants in comparison to BATEA designated plants and to U.S EPA reference limits
- establish the need for controlling monitored parameter
- provide a basis for altering the monitoring frequencies
- relate discharges to water quality impacts

i) Conventional Pollutants

The conventional pollutants chosen for thrice weekly monitoring serve as general indicators of a plant's impact on the environment. In specific cases, these parameters can also indicate treatment plant performance.

Dissolved Organic Carbon - see comments under Daily

Total Organic Carbon (TOC)

* required whenever TSS concentration is greater than 15 mg/L to ensure that the significant particulate organic component is not missed as would be the case by doing DOC only
* a relatively high detection limit of 5 mg/L precludes its general use in place of DOC
* measures most of the oxidizable organic carbon including the organic chemicals not oxidized in BOD5 tests

* a measure of both particulate and dissolved organic carbon
* may be related to BOD5 for a given waste effluent
* indirect measure of the oxygen required to assimilate the biodegradable portion of the waste

Total Suspended Solids (TSS)

* gross measure of suspended material including volatile suspended solids (organic) and inorganic materials
* organic fractions may include grease, oils, fibres, microorganisms and dispersed insoluble organic compounds
* inorganic materials include sand, silt, clay and insoluble metal compounds
* measure of the effectiveness of treatment system separation equipment
* may be a substrate for toxic contaminants which can leach out in water
* may increase turbidity of water reducing recreational value
* may impair photosynthetic activity of aquatic plants
* can form sludge banks on settling leading to localized anaerobic conditions
* may kill fish by clogging gills

Ammonia plus Ammonium (Total ammonia)

* a measure of both ionized and un-ionized ammonia in effluents
* ammonia may be toxic to fish at levels above 0.02 mg/L (un-ionized)
* the concentration of ammonia in its un-ionized state varies with pH and temperature
* 10 mg/L of total ammonia (approx. equivalent to 0.04 mg/L of un-ionized NH_3 (pH = 7; T = 20 degrees C) in the effluent was selected as the concentration requiring thrice weekly monitoring
* MOE recommends 0.5 mg/L NH_3 (total) as the upper limit for raw water supplies and 0.02 mg/L of un-ionized NH_3 for the protection of aquatic life

Total Kjeldahl Nitrogen (TKN)

* a measure of both organic nitrogen and total ammonia
* measure of nitrification in biological treatment plants
* may present an oxygen demand on the receiving water through nitrification
* potential nutrient leading to growth of undesirable aquatic plants

Oxidized Nitrogen (Total Nitrates + Nitrites)

* measures total oxidized nitrogen (nitrate + nitrite)
* measure of denitrification in biological treatment plants with nitrification
* Ministry drinking water objectives limit $NO_3 + NO_2$ to 10 mg/L
* levels of NO_3 above 10 mg/L in drinking water can impact hemoglobin in children leading to infantile methemoglobinemia

Total Phosphorus (Total P)

* added to biological treatment systems as a nutrient to aid in biological growth
* monitoring for phosphorus is required thrice weekly on all biological treatment effluent streams to determine its utilization in bio-treatment
* phosphorus discharges to the Great Lakes are identified as a concern in the Canada-U.S. Great Lakes Water Quality Agreement

Phenolics (4AAP)

* the 4-amino antipyrine (4AAP) method measures total phenolics
* tend to be ubiquitous contaminants and are thus good indicators of pollution severity
* can be general indicators of treatment
* Canadian Water Quality Guideline level is 1 ug/L to avoid tainting fish flesh

Sulphides

* required in site-specific situations as dictated by usage

* hydrogen sulphide is toxic to aquatic life (a function of temperature, pH and dissolved oxygen)

ii) Priority Pollutants

An analytical cut-off value was used to determine the thrice weekly frequency assignments for priority pollutants. Priority pollutants found in the databases available to the Ministry at concentrations above the medians of the long-term weighted means (LTM) listed by the U.S. EPA for BATEA facilities (Table 4 in the Appendix) were placed in the thrice weekly monitoring category. Where LTM values were unavailable, use was made of Ministry PWQO.

The data in Table 4 of the Appendix was published in the July 17, 1985 U.S. Federal Register and represents actual performance data for plants with BATEA (biological treatment) and in-plant control technologies.

Sector plants with in-place treatment would, through this thrice weekly data, demonstrate their performance in comparison to U.S. EPA BATEA.

In special cases, where priority pollutants were currently being monitored on a daily basis, the daily frequency was retained. As an example, total lead is monitored daily in the effluent of one sector plant and this has been retained.

WEEKLY

Weekly monitoring requirements are an economic and technical compromise between thrice weekly and monthly data. The weekly monitoring frequency will provide estimates of both concentrations and loadings which will assist in defining any future monitoring and limits requirements.

Conventional Pollutants

Weekly monitoring data for conventional pollutants will be used to determine the need for further monitoring for a given compound and to establish the appropriate monitoring frequency to allow the generation of data for future limits setting and control.

Weekly data will also be used to provide estimates of both monthly and longer term loadings for reporting to other jurisdictions.

Total Phosphorus (Total P)

* required weekly on all final discharges to provide estimates of monthly average loadings to the International Joint Commission (IJC)

* required weekly for process and combined effluents only if the concentration in the MOE databases exceeded 100 ug/L (approx. 3 x 30 ug/L guideline for rivers and lakes to avoid nuisance plant growth)

Oil & Grease (Solvent Extractables)

* measure of the gross hydrocarbon that could produce a visible film, sheen or discolouration on the surface of a watercourse

* substances measured may include hydrocarbons, fatty acids, soaps, fats, oils and waxes

* measure of groups of substances whose common characteristics is their solubility in chlorofluorocarbons or hexane

* can cause tainting of edible aquatic organisms

* can cause odour and taste problems in drinking water

* may form deposits on shorelines and bottom sediments

* oil slicks prevent the full aesthetic enjoyment of water

* can be a carrier for other toxic contaminants

* fish and water fowl are adversely affected by oils

* crude oil at 0.3 mg/L can be toxic to freshwater fish

Priority Pollutants

Priority pollutants, listed in the OCM Sector List in Table 3 of the Appendix, which were found at least once in the databases available to the Ministry above the Ministry MDL but below the long-term weighted means listed by the U.S. EPA for BATEA facilities (Table 4 in the Appendix) were placed in the weekly monitoring category.

The weekly priority pollutant data will be used to:

- verify the presence or absence of the compounds

- provide estimates of the concentrations and variability of the compounds for comparison with BATEA performance levels to evaluate the need for control of these compounds

- determine the need for further monitoring for a given compound and to establish that frequency

In cases where off-site third party wastes are treated in biological treatment plants, weekly monitoring of a long list of priority pollutants is required to ensure that potential impacts are not missed.

MONTHLY

Monthly monitoring of relatively long lists of parameters is required to establish the presence or absence of contaminants of concern. The concentration data will also be used in conjunction with flow measurement data to calculate loadings for each of the compounds detected.

The monthly monitoring will also provide relevant chemical analysis data for the interpretation of the toxicity test results.

Any one contaminant found above the MDL in an effluent triggered the assignment of the whole analytical test group for monthly monitoring.

In this way, the possibility of detecting similar compounds was selectively increased on the basis of at least one detection of an analytical test group member without the need to analyze for all of the other analytical test groups at a greater frequency for each effluent each month.

Knowledge of raw material usage, by-products, and products could also initiate monthly monitoring even if the parameters did not appear in the databases examined by the Ministry staff.

Based on the above rationale, any one or all of the following analytical test groups could be specified for monthly monitoring on an effluent specific basis:

*	Group 2	Cyanide
*	Group 9	Total Metals
*	Group 10	Hydrides
*	Group 11	Chromium (Hexavalent)
*	Group 12	Mercury
*	Group 13	Total Alkyl Lead
*	Group 16	Volatiles, Halogenated
*	Group 17	Volatiles, Non-Halogenated
*	Group 18	Volatiles, Water Soluble
*	Group 19	Extractables, Base Neutral
*	Group 20	Extractables, Acid (Phenolics)
*	Group 23	Extractables, Neutral Chlorinated
*	Group 24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans
*	Group 27	PCBs

Phthalates, included in analytical test group 19, were not included for monitoring at frequencies other than monthly because they were generally considered to be laboratory artifacts. They often appeared in both intake and effluent results in the databases available to the Ministry.

To allow a determination of any intake water contaminant impact on the final effluents, plants were encouraged to analyze their intake water for the same parameters as the longest parameter list for that site's effluents. These samples would have to be collected and analyzed using the sampling and analytical protocols specified for all other effluent streams.

B) ONCE-THROUGH COOLING WATER (OTCW)

For the OCM Sector, OTCW will be monitored on a monthly basis for a list of parameters specific to the process block or area from which the OTCW originated.

All OTCW is to be monitored for pH, DOC, total phosphorus, specific conductance, TSS and oil and grease to ensure that no long term gross leaks exist from the process side. In addition, specific priority pollutant groups are also required on a site-specific basis to ensure that there are no low level losses.

C) STORM WATER AND WASTE DISPOSAL SITE EFFLUENT

The purpose of monitoring these streams is to provide an estimate of the impact on receiving water from storm water or waste disposal site effluent loadings in relation to process discharges to determine whether more intensive monitoring or corrective action may be required in the future.

In the OCM Sector, the majority of the plant sites have no storm water or waste disposal site effluent collection systems. Storm water will be monitored for at least one storm event per month or at such a frequency as to provide 12 data points in a year. Failure to monitor a storm event in a given month will require doubling up for the next month. Waste disposal site effluent must be monitored at the time of discharge or once a month, whichever is less.

There is also the requirement that at least 2 of the 12 data points for storm water discharges be obtained in the winter or spring months during periods of thaw. This will provide some insight into the potential for contamination from runoff during the winter.

The list of parameters to be monitored has been set out in site-specific schedules and is related to the parameters monitored in process streams.

D) EVENT MONITORING - EMERGENCY OVERFLOWS

Emergency overflows are process effluent, combined effluent or batch discharges which by-pass their intended destination because of unforeseen emergencies and end up going directly to a surface watercourse.

The purpose of monitoring emergency overflows is to estimate the impact on the environment and to record the number of such occurrences for possible remedial action.

The parameters to be monitored are set out in the site-specific monitoring schedules and are based on what would normally be present in the streams if there was no overflow.

XIV CHARACTERIZATION

Characterization is the quantitative determination of a specified number of conventional pollutants and all of the compounds on the OCM Sector List using the analytical techniques specified in the General Effluent Monitoring Regulation.

The characterization list for the OCM Sector is shown in Table 3 of the Appendix. It consists of fifteen conventional parameters and 137 OCM Sector List parameters. The latter total represents all of the EMPPL parameters for which validated analytical protocols currently exist except for four parameters, lithium, strontium, uranium and 4,5-dichloroguaiacol, which were not included because they are not found in the effluents of the OCM Sector plants.

The primary purpose of characterization is to establish the presence or absence of the listed parameters in all of the OCM Sector process effluents, combined effluents and batch discharges. Characterization data and flow information may also be used to provide estimates of annual loadings for all parameters for comparison among the MISA sectors.

Characterization data may indicate if a change of monitoring frequency may be required for a given parameter. This may lead to more intensive monitoring or eventual delisting of a given compound from the OCM Sector List.

In order to determine the appropriate frequency for characterization, use was made of statistical analyses. The characterization requirements took into account the four industry pre-regulation characterizations and the Ministry characterizations - one during the pre-regulation period and two to be done within the regulation period. Thus, a potential for seven characterizations was in place to which would be added the regulation requirements.

From the statistical data shown in Table 6 of the Appendix, it is clear that for a given parameter that is present 50% of the time or greater in an effluent, the probability of finding the contaminant is very high and virtually the same whether eleven samples (99.9% probability) or four samples (93.7% probability) are taken.

For a given parameter that is present infrequently such as 2% of the time, characterizing eleven samples provides only a 19.9% chance of detecting the parameter. Nine samples would provide only a slightly reduced probability of 16.6%. The biggest unknown in attempting to determine the appropriate characterization frequency is the a priori probability of a parameter's presence in an effluent.

A review of the OCM Sector plant operations was carried out with a view to subgrouping the plants to reduce the costs of characterization without a significant sacrifice in technical data.

The OCM Sector, for the purposes of characterization, was sub-divided into two groups: Group A - simple process sites and Group B - moderate/complex process sites. The assignment was based on consideration of the following factors:

- process/site complexity
- process variability
- product/raw material type
- available data base
- site located in area of concern
- past and current environmental performance

Table 7 of the Appendix lists the plants in each of the A and B groups.

For the OCM Sector, the four Group A companies (Table 7) are to characterize their process and combined effluents semi-annually while the fifteen Group B companies are to do theirs quarterly. When combined with the pre-regulation characterization data and the Ministry audit data, the Regulation characterization requirements would provide a total of nine and eleven characterization data sets for companies in Groups A and B, respectively. With these number of samples, the data in Table 6 indicate that the probability of detecting a frequently occurring parameter (one in two to one in five) would be no worse than 86.6% and could be as high as 99.9%.

In cases where a plant in Group A provided less than four days of pre-regulation characterization data, the regulation requirement for characterization was increased from two to four.

A distinction was made between the characterization requirements for analytical test group 24 (chlorinated dibenzo-p-dioxins and dibenzofurans) and the remaining OCM Sector List parameters.

Because of the high cost of analysis for analytical test group 24 and the low probability of the presence of the group members in OCM Sector effluents, plant sites which submitted four analyses for group 24 in the pre-regulation effluent characterization program were only required to characterize their effluents for group 24 in the regulation semi-annually. However if less than four days of data were submitted, quarterly monitoring for group 24 was required in the regulation period although the plant might be in the Group A category requiring semi-annual characterization.

The characterization requirements in the regulation were augmented by requiring open characterization of the effluents at the same frequencies as the characterizations.

XV OPEN CHARACTERIZATION

Open characterization will provide tentative identification of both organic compounds and inorganic elements that are not on the OCM Sector List as well as a semi-quantitative estimation of their concentrations. Use is made of gas chromatography/mass spectrometry (GC/MS) and inductively coupled plasma or atomic emission spectroscopy to obtain the data.

Open characterization will be used to identify parameters in process effluents, combined effluents and batch discharges not currently on the EMPPL and will be used to provide candidate compounds for hazard assessment for potential addition to the EMPPL. In this way, open characterization when combined with characterization data will provide a more relevant parameter list for future monitoring and control. The 1987 EMPPL and the 1988 EMPPL update do not cover all of the compounds that could be discharged from the OCM Sector plants because of the current lack of any extensive monitoring data.

The relatively modest incremental cost of running open characterization in conjunction with characterization analysis and the large pay back in data produced is a strong justification for coupling open scans with the OCM Sector characterization requirements.

The detection limit achievable for open characterization of organic compounds will depend upon the sample size, concentration factor, efficiency of extraction from the original matrix, GC/MS conditions, overall complexity of the sample, degree of chromatographic resolution from other co-extractives and the mass spectral characteristics of specific compounds.

The General Regulation requires that all organic compound peaks above 10 parts per billion relative to the two standards, 1,3-dichlorobutane and D10 phenanthrene, be identified and semi-quantified. For the elemental scans, a 50 part per billion detection limit is specified.

It is the intention of the Ministry Laboratory to identify as many compounds as possible that can be extracted (or purged) from the supplied inspection sample. A target detection limit for organics for the Ministry Laboratory work has been set at 1 ppb.

The protocols and procedures for analysis of samples for open characterization are outlined in two Ministry documents entitled, "Techniques for the Gas Chromatography-Mass Spectrometry Identification of Organic Compounds in Effluents" (24) and "Guidance Document for the Elemental Characterization of Liquid Waste Samples" (25).

XVI TOXICITY TESTING

Toxicity testing requirements for the OCM Sector consist of both the fish toxicity test (Rainbow Trout Acute Lethality Test) and the Daphnia magna Acute Lethality Test as outlined in the published protocols entitled:

* "Protocol to Determine the Acute Lethality of Liquid Effluents to Fish" (26);

* "Daphnia magna Acute Lethality Toxicity Test Protocol" (27).

Since it is essential to protect all forms of aquatic life, it is critical that the impact of various effluents be assessed on as many different types of aquatic organisms as is practical.

The Ministry has reviewed both Daphnia magna and rainbow trout test results on the same samples and concluded that Daphnia magna and trout differ in their sensitivity to some effluents and thus the addition of the Daphnia magna test will provide valuable additional information.

The lack of consistent and uniform toxicity data for most of the plants in the Sector, make it necessary to require that both toxicity tests be done on final discharges to surface watercourses.

The monitoring frequency for toxicity testing on final discharges (which include process effluents, combined effluents and batch discharges) will be monthly for both tests. However, if the final discharge for the first three consecutive months using the rainbow trout acute lethality test results in fish mortality for no more than 2 out of 10 fish at each dilution, then the rainbow trout test can be reduced to a monthly pass/fail test on 100% undiluted effluent.

Mortality of more than 2 out of 10 fish in the pass/fail test will require reversion to three consecutive months of LC50 acute lethality tests before the pass/fail test is permitted again.

The Daphnia magna test will be carried out at a monthly frequency for the duration of the Regulation to provide a valid database.

Both the full serial dilution rainbow trout and the Daphnia magna tests will be done on OTCW on a quarterly basis with the provision, however, that if all of the samples for the first quarterly testing show mortality of no more than 2 out of 10 species at each dilution), then the remaining quarterly testing can be done for both species on 100% undiluted effluent only. Serial dilutions will not be required.

The probability of OTCW being non-toxic is extremely high so that it makes little economic sense to demand full dilution tests if the 100% OTCW is non-lethal. However, mortality of more than 2 out of 10 species in any 100% undiluted sample from a given sampling point requires full LC50 tests for samples from that sample point for both species for all of the remaining quarterly tests.

pH Adjustment

pH adjustment will not be allowed on samples collected under the OCM Sector Regulation for the following reasons:

- the Ministry needs to establish the actual toxicity level of the final discharges in the form of LC50 values to assist in future toxicity limit setting. The LC50 limits to be set will be based on those limits achievable using BATEA. The toxicity data will assist in defining the limit

- pH adjustment through the addition of a neutralizing reagent simulates no condition that actually occurs in the environment

- adjustment of pH may have an impact on modifying the toxicity of other compounds in the sample

Final discharges with pH outside the Ministry guidelines of 6.5 to 9.5 will be tested using both the rainbow trout and the Daphnia magna toxicity tests without pH adjustment. While the undiluted effluent may be predictably lethal primarily due to pH alone, the series of dilutions required under the tests will isolate the pH effect and allow the calculation of an LC50 value.

Companies may, on a voluntary basis, where the pH is outside the range of the Ministry guidelines, perform toxicity tests on pH adjusted effluents in parallel with those on unadjusted effluents. Submission of data on pH adjusted samples will be voluntary and will be used by the Ministry for comparison with the pH unadjusted sample results.

Use of Full Dilution Series vs. Full Strength (Pass/Fail) Tests

Pass/fail tests produce non-quantitative results. For some plants, it may not be possible for available technology to achieve an LC50 of 100%. Thus, doing full dilution series to determine an LC50 on an effluent will allow the option of selecting a technically sound final toxicity criteria instead of using only pass/fail.

It would have been preferable to obtain twelve LC50 fish toxicity tests on the final discharges of the sector plants but, as a concession to costs, the regulation allows running pass/fail tests provided that the first three monthly tests are done as full dilution LC50's with fish mortality no greater than two at any dilution.

It is anticipated that plants with toxic effluents will provide twelve LC50 results while those with non-toxic effluents will provide an initial three LC50 and nine pass results.

For effluent samples that are non-lethal at full strength, additional information is rarely obtained from the dilutions in a full series LC50.

The use of a quarterly LC50 fish toxicity requirement, after an initial three consecutive monthly LC50 tests, for process, combined and batch effluents was considered. However, it was felt that because of the lack of coverage by the test for two months out of three for the last three quarterly periods of the regulation, the current requirement was a better compromise between cost and technical data need.

XVII QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control (QA/QC) encompass all of the procedures undertaken to ensure that data produced are generated within known probability limits of accuracy and precision.

Quality assurance is the overall verification program which provides producers and users of data the assurance that predefined standards of quality at

predetermined levels of confidence are met. Quality assurance is made up of two elements: quality control and quality assessment.

Quality control is the overall system of guidelines, procedures and practices which are designed to regulate and control the quality of products or services with regards to previously established performance criteria and standards.

Quality assessment is the overall system of activities which ensure that quality control is being performed effectively. This is carried out immediately following quality control and involves evaluation and auditing of quality control data to ensure the success of the quality control program.

QA/QC is one of the most important aspects of the MISA monitoring regulations. The QA/QC program includes many small but essential activities ranging from proving the cleanliness of sample bottles, using proper sampling equipment, containers and preservatives to instrument calibration; validation of authenticity of standards, inclusion of blanks, spikes and controls in analytical runs to documenting performance; participation in external round-robins to defining the proper method for reporting a final data number. Omission of one of these activities can lead to unreliable data resulting in improper conclusions and perhaps inappropriate actions.

The financial stakes riding on the monitoring regulation data are too high to compromise the generated data with inadequate QA/QC.

XVIII ECONOMIC IMPLICATIONS OF THE REGULATION

The monitoring and abatement requirements under the MISA program will require both operating and capital expenditures. The Policy and Planning Branch of the Ministry has produced two reports which assess the economic environment of the OCM Sector and analyze the financial implications of the incremental costs of monitoring imposed by the MISA monitoring requirements.

The first report entitled "Economic Profile of the Organic Chemical Manufacturing Sector - Summary Report" (28) summarizes the key features of the organic chemical manufacturing sector in Canada and in Ontario. Its purpose is three-fold:

- to establish general financial profiles of the companies in the sector
- to assess the competitiveness of the sector in global and domestic contexts
- to assess the factors which may have a bearing on the future outlook and long term viability of the sector

The report concludes that the financial health of the OCM Sector is positive - a benefit from the current positive business cycle. The medium and future-term outlooks are also positive, with the sector likely to enjoy relatively lower feedstock prices and high demand for products.

The second report entitled "Ontario's Organic Chemical Manufacturing Sector - Monitoring Cost Estimates" (29) presents estimates and implications of the incremental costs to the OCM Sector of the monitoring regulation requirements.

The estimated total incremental operating costs based on the effluent-specific schedules for the nineteen plants in the OCM Sector by specific monitoring function are summarized as follows:

Sampling/Flow Measurement	$1.2 million
Characterization	$0.8 million
Routine Monitoring	$5.4 million
Toxicity Testing	$0.3 million
Reporting	$0.4 million

The total incremental operating costs are estimated to be $8.1 million. An additional $2.8 million has been estimated for capital costs for a total cost of $10.9 million. Two plants account for almost 46% of the total costs.

The costs are point-estimates and may be overestimates or underestimates. For example, the assumption that the analyses will be done by commercial laboratories may overestimate costs since many plants have in-house analytical capabilities. Conversely, these costs could be underestimates if the transportation costs incurred are higher than those assumed in the report.

If the regulation had required a common monitoring list for all effluents, the operating costs for routine monitoring would have been approximately $16.2 million rather than $5.4 million. The difference in the costs of $10.8 million is a measure of the cost-effectiveness of the effluent-specific approach used with the OCM Sector.

The above costs do not include the costs of current monitoring programs which would be superseded by the OCM Regulation. The OCM Sector has estimated current costs of monitoring to be about $0.85 million.

The economic impacts of the estimated monitoring costs on the OCM Sector are small in relation to aggregate sectoral financial indicators. For individual OCM Sector firms subject to MISA monitoring requirements, impacts are varied but do not seem to be unduly burdensome. Impacts on average after-tax profits (between 1982 and 1986) range from 0.1% to 3.4%.

The monitoring requirements will produce benefits in the form of enhanced employment opportunities, development of technology and the establishment of a sufficient data base from which cost-effective control programs can be derived.

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APPENDIX

TABLE 1 - STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

CANADA

MAJOR GROUP CLASS	SIC	NAME
15		**Rubber Products Industries**
	1511	Tire & Tube Industry
	1521	Rubber Hose & Belting Industry
	1599	Other Rubber Products Industries
16		**Plastic Products Industries**
	1611	Formed & Expanded Plastic Products Industry
	1621	Plastic Pipe & Pipe Fittings Industry
	1631	Plastic Film & Sheeting Industry
	1691	Plastic Bag Industry
	1699	Other Plastic Product Industries, Not Elsewhere Classified
17		**Leather & Allied Products Industries**
	1711	Leather Tanneries
18		**Primary Textile Industries**
	1811	Man-made Fibre & Filament Yarn Industry
	1829	Other Spun Yarn & Woven Cloth Industries
19		**Textile Product Industries**
	1992	Contract Textile Dyeing & Finishing Industry
	1995	Tire Cord Fabric Industry
37		**Chemical & Chemical Products Industries**
	3712	Industrial Organic Chemical Industries
	3729	Other Agricultural Chemical Industries
	3731	Plastic & Synthetic Resin Industry
	3751	Paint & Varnish Industry
	3761	Soap & Cleaning Compounds Industry
	3791	Printing Ink Industry
	3792	Adhesives Industry
	3799	Other Chemical Products Industries, Not Elsewhere Classified

UNITED STATES

	2865	Cyclic (Coal Tar) Crudes and Cyclic Intermediates, Dyes and Organic Pigments (Lakes & Toners)
	2869	Industrial Organic Chemicals, Not Elsewhere Classified
	2821	Plastics Materials, Synthetic Resins and Nonvulcanizable Elastomers
	2823	Cellulosic Man-made Fibres
	2824	Synthetic Organic Fibres, Except Cellulosic
	2822	Synthetic Rubber *(Vulcanizable Elastomers)*

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
Abietic Acid	514-10-3	-
Acenaphthene	83-32-9	19
Acenaphthene, 5-nitro	602-87-9	19
Acenaphthylene	208-96-8	19
Acridine	260-94-6	-
Acrolein	107-02-8	18
Acrylamide	79-06-1	-
Acrylonitrile	107-13-1	18
Aluminum	7429-90-5	9
4-Aminoazobenzene	60-09-3	-
Aniline	62-53-3	-
Anthracene	120-12-7	19
Antimony	7440-36-0	10
Aroclor 1016 (PCB)	12674-11-2	27
Aroclor 1221 (PCB)	11104-28-2	27
Aroclor 1232 (PCB)	11141-16-5	27
Aroclor 1242 (PCB)	53469-21-9	27
Aroclor 1248 (PCB)	12672-29-6	27
Aroclor 1254 (PCB)	11097-69-1	27
Aroclor 1260 (PCB)	11096-82-5	27
Arsenic	7440-38-2	10
Benzaldehyde	100-52-7	-
Benz(a)acridine	225-11-6	-
Benz(a)anthracene	56-55-3	19
Benzene	71-43-2	17
Benzeneacetonitrile	140-29-4	-
Benzidine	92-87-5	-
1H-Benzimidazole	51-17-2	-
Benzo(b)fluoranthene	205-99-2	19
Benzo(k)fluoranthene	207-08-9	19
Benzo(g,h,i)perylene	191-24-2	19
Benzo(a)pyrene	50-32-8	19
Benzo(h)quinoline	230-27-3	-
Benzo(b)thiophene	95-15-8	-
Benzyl alcohol	100-51-6	-
Beryllium	7440-41-7	9
Biphenyl	92-52-4	19
Borneol	507-70-0	-
Boron	7440-42-8	9
1-Bromo-2-chloroethane	107-04-0	-
Bromodichloromethane	75-27-4	16
Bromoform	75-25-2	16
Bromomethane	74-83-9	16

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
***p*-Bromophenol**	106-41-2	-
4-Bromophenyl phenyl ether	101-55-3	19
1,3-Butadiene	106-99-0	-
Butanal	123-72-8	-
***2*-Butenoic acid**	3724-65-0	-
***2*-(2-Butoxyethoxy)ethanol**	112-34-5	-
Butylamine	109-73-9	-
***N*-*t*-butyl-2-benzothiazolesulphenamide**	95-31-8	-
Butylbenzylphthalate	85-68-7	19
Cadmium	7440-43-9	9
Camphene	79-92-5	19
***9H*-Carbazole**	86-74-8	-
Carbon Disulfide	75-15-0	-
Carbon tetrachloride	56-23-5	16
Chorinated dibenzofurans*	N/A	24
Chorinated dibenzo-p-dioxins*	N/A	24
Chlorobenzene	108-90-7	16
Chlorodehydroabietic acid	57055-38-6	-
Chlorodibromomethane	124-48-1	16
Chloroform	67-66-3	16
Chloromethane	74-87-3	16
Bis(2-chloroethoxy)methane	111-91-1	19
Bis(2-chloroethyl)ether	111-44-4	19
Bis(2-chloroisopropyl)ether	108-60-1	19
Bis(chloromethyl)ether	542-88-1	-
4-Chloro-3-methylphenol	59-50-7	20
1-Chloronaphthalene	90-13-1	19
2-Chloronaphthalene	91-58-7	19
o-Chlorophenol	95-57-8	20
4-Chlorophenylphenyl ether	7005-72-3	19
Chromium	7440-47-3	9
Chrysene	218-01-9	19
Cineole	470-82-6	-
Cobalt	7440-48-4	9
Copper	7440-50-8	9
m-Cresol	108-39-4	20
o-Cresol	95-48-7	20
p-Cresol	106-44-5	20
Cyclohexanol	108-93-0	-
Cyclohexanone	108-94-1	-
Cyclohexylamine	108-91-8	-
***n*-Cyclohexyl-2-benzothiazole sulphenamide**	95-33-0	-
Dehydroabietic acid	1740-19-8	-

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
Dibenz(a,h)anthracene	53-70-3	19
2,6-Di-t-butyl-4-methylphenol	128-37-0	-
Di-n-butylphthalate	84-74-2	19
Di-n-octyl phthalate	117-84-0	19
1,2-Dichlorobenzene	95-50-1	16
1,3-Dichlorobenzene	541-73-1	16
1,4-Dichlorobenzene	106-46-7	16
3,3'-Dichlorobenzidine	91-94-1	-
1,4-Dichlorobut-2-ene	764-41-0	-
1,2-Dichlorobut-3-ene	760-23-6	-
Dichlorobutene (mixture)	11069-19-5	-
1,1-Dichloroethane	75-34-3	16
1,2-Dichloroethane	107-06-2	16
Cis-1,2-Dichloroethylene	156-59-2	-
Trans-1,2-Dichloroethylene	156-60-5	16
1,1-Dichloroethylene	75-35-4	16
4,5-Dichloroguaiacol	2460-49-3	-
2,4-Dichlorophenol	120-83-2	20
2,6-Dichlorophenol	87-65-0	20
1,2-Dichloropropane	78-87-5	16
Cis-1,3-Dichloropropylene	10061-01-5	16
Trans-1,3-Dichloropropylene	10061-02-6	16
1,2-Diethylbenzene (ortho)	135-01-3	-
1,3-Diethylbenzene (meta)	141-93-5	-
Diethyl phthalate (DEP)	84-66-2	-
n,n-Diethyl-m-toluamide (DEET)	134-62-3	-
5,6-Dihydro-2-methyl-1,4-oxathiin-3-carboxanilide	5234-68-4	-
5,6-Dihydro-2-methyl-1,4-oxathiin-3-carboxanilide-4,4-dioxide	5259-88-1	-
Dimethyl disulphide	624-92-0	-
Dimethylphenol	1300-71-6	-
2,4-Dimethylphenol	105-67-9	20
2,5-Dimethylphenol	95-87-4	-
2,6-Dimethylphenol	576-26-1	-
3,4-Dimethylphenol	95-65-8	-
3,5-Dimethylphenol	108-68-9	-
Dimethyl sulphide	75-18-3	-
4,6-Dinitro-o-cresol	534-52-1	20
2,4-Dinitrophenol	51-28-5	20
2,4-Dinitrotoluene	121-14-2	19
2,6-Dinitrotoluene	606-20-2	19
4,4'-Di-n-octyldiphenylamine	101-67-7	-

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
1,4-Dioxane	123-91-1	-
Diphenylamine	122-39-4	19
Diphenyl ether	101-84-8	19
Diphenylmethane-4,4'-diisocyanate (MDI)	101-68-8	-
Diphenyl 4,4'-methylenedicarbanilate	101-65-5	-
Ethanol	64-17-5	-
Ethylbenzene	100-41-4	17
Bis(2-Ethylhexyl)phthalate	117-81-7	19
Ethylene dibromide	106-93-4	16
Ethylene thiourea	96-45-7	-
Eugenol	97-53-0	-
Fluoranthene	206-44-0	19
Fluorene	86-73-7	19
Formaldehyde	50-00-0	-
Furfural	98-01-1	-
Guaiacol	90-05-1	-
Hexachlorobenzene	118-74-1	23
Hexachlorobutadiene (HCBD)	87-68-3	23
1,2,3,4,5,6-Hexachlorocyclohexane (gamma isomer) (Lindane)	58-89-9	-
Hexachlorocyclopentadiene	77-47-4	23
Hexachloroethane	67-72-1	23
Hydrazine	302-01-2	-
Hydrogen sulphide	7783-06-4	-
2-Hydroxybiphenyl	90-43-7	-
4-Hydroxybiphenyl	92-69-3	-
2-Hydroxy-3-methyl-2-cyclopenten-1-one	80-71-7	-
Indeno(1,2,3-cd)pyrene	193-39-5	19
Indole	120-72-9	19
Isopimaric acid	5835-26-7	-
Lead	7439-92-1	9
Levopimaric acid	79-54-9	-
Limonene	138-86-3	-
Lithium	7439-93-2	9
Mercaptobenzothiazole	149-30-4	-
2-Mercaptobenzothiazole disulphide	120-78-5	-
2-Mercaptoethanol	60-24-2	-
Mercury	7439-97-6	12
2,2-Methylenebis(6-nonyl)-p-cresol	7786-17-6	-
Methylene chloride	75-09-2	16
Methyl ethyl ketone	78-93-3	-
n-Methylformamide	123-39-7	-
Methylmethacrylate	80-62-6	-

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
1-Methylnaphthalene	90-12-0	19
2-Methylnaphthalene	91-57-6	19
2-Methylpyridine	109-06-8	-
Methyl styrene	25013-15-4	-
m-Methylstyrene	100-80-1	-
p-Methylstyrene	622-97-9	-
Molybdenum	7439-98-7	9
Morpholine	110-91-8	-
n-Morpholinyl-2-benzothiazole sulphenamide	102-77-2	-
Naphthalene	91-20-3	19
1-Naphthalenol	90-15-3	-
Neoabietic acid	471-77-2	-
Nickel	7440-02-0	9
Nitrobenzene	98-95-3	-
1-Nitronaphthalene	86-57-7	-
2-Nitronaphthalene	581-89-5	-
2-Nitrophenol	88-75-5	-
4-Nitrophenol	100-02-7	20
n-Nitrosodimethylamine	62-75-9	-
n-Nitrosodi-n-propylamine	621-64-7	19
n-Nitrosodiphenylamine	86-30-6	19
4-Nitrosomorpholine	59-89-2	-
Octachlorostyrene	29082-74-4	23
Oleic Acid	112-80-1	-
Pentachlorobenzene	608-93-5	23
Pentachlorophenol	87-86-5	20
Perylene	198-55-0	19
Phenanthrene	85-01-8	19
Phenol	108-95-2	20
n-phenylacetamide	103-84-4	-
Pimeric acid	127-27-5	-
Pine oil	8002-09-3	-
Potassium ethyl xanthate	140-89-6	-
Potassium hexyl xanthate	2720-76-5	-
Pyrene	129-00-0	19
Quinoline	91-22-5	-
8-Quinolinol	148-24-3	-
Selenium	7782-49-2	10
Silver	7440-22-4	9
Sodium butylxanthate	141-33-3	-
Sodium dimethyl dithio carbomate	128-04-1	-
Sodium ethylxanthate	140-90-9	-
Strontium	7440-24-6	9

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
Styrene	100-42-5	17
Tannic acid	1401-55-4	-
Tetrachloroacetone	31422-61-4	-
1,1,3,3-Tetrachloroacetone	632-21-3	-
1,2,3,4-Tetrachlorobenzene	634-66-2	23
1,2,3,5-Tetrachlorobenzene	634-90-2	23
1,2,4,5-Tetrachlorobenzene	95-94-3	23
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	24
1,1,1,2-Tetrachloroethane	630-20-6	-
1,1,2,2-Tetrachloroethane	79-34-5	16
Tetrachloroethylene	127-18-4	16
Tetrachloroguaiacol	2539-17-5	-
2,3,4,5-Tetrachlorophenol	4901-51-3	20
2,3,4,6-Tetrachlorophenol	58-90-2	20
2,3,5,6-Tetrachlorophenol	935-95-5	20
Tetraethyl lead	78-00-2	13
Tetraethyl thiuram disulphide	97-77-8	-
Tetrahydrofuran	109-99-9	-
1,2,3,4-Tetrahydronaphthalene (Tetralin)	119-64-2	-
Tetramethyl thiuram disulphide	137-26-8	-
Thallium	7440-28-0	9
Thiophene	110-02-1	-
Thiourea	62-56-6	-
Toluene	108-88-3	17
2,4-Toluene diisocyanate	584-84-9	-
2,6-toluene diisocyanate (2,6-TDI)	91-08-7	-
Toluene diisocyanate-mixture (TDI)	26471-62-5	-
Tributyl phosphate	126-73-8	-
1,1,3-Trichloroacetone	921-03-9	-
1,2,3-Trichlorobenzene	87-61-6	23
1,2,4-Trichlorobenzene	120-82-1	23
1,1,1-Trichloroethane	71-55-6	-
1,1,2-Trichloroethane	79-00-5	16
Trichloroethylene	79-01-6	16
Trichlorofluoromethane	75-69-4	16
Trichloroguaiacol	61966-36-7	-
2,3,4-Trichlorophenol	15950-66-0	20
2,3,5-Trichlorophenol	933-78-8	20
2,4,5-Trichlorophenol	95-95-4	20
2,4,6-Trichlorophenol	88-06-2	20
2,4,5-Trichlorotoluene	6639-30-1	23
Triethyl lead	N/A	13
1,2,4-Trimethylbenzene	95-63-6	-

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1988 UPDATE)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP *
Trimethylbenzenes	25551-13-7	-
Trimethylnaphthalenes	28652-77-9	-
Trixylyl phosphate	25155-23-1	-
Uranium	7440-61-1	9
Vanadium	7440-62-2	9
Vanillic acid	121-34-6	-
Vinyl chloride	75-01-4	16
o-Xylene	95-47-6	17
m-Xylene	108-38-3	17
p-Xylene	106-42-3	17
Zinc	7440-66-6	9
Zinc diethyl dithio carbamate	14324-55-1	-

*** Represents tetra-, penta-, hexa-, hepta-, and octa- congeners**

NOTE: 1. MOE analytical methods are NOT currently available for parameters shown in bold print.

2. Italicized print indicates parameters added to EMPPL in the Nov. 1988 update.

Number of parameters with existing validated analytical methods	**141**
Number of parameters with no analytical methods	**125**
Total Number of EMPPL Parameters/Groups	**266**

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

CONVENTIONALS

ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #'s'
1	Chemical Oxygen Demand	Chemical oxygen demand (COD)	N/A*
2	Cyanide	Cyanide	57-12-5
3	Hydrogen ion (pH)	Hydrogen ion (pH)	N/A*
4a	Nitrogen	Ammonia plus Ammonium	N/A*
		Total Kjeldahl nitrogen	N/A*
4b		Nitrate + Nitrite	N/A*
5a	Organic carbon	Dissolved organic carbon (DOC)	N/A*
5b		Total organic carbon (TOC)	N/A*
6	Total phosphorus	Total phosphorus	7723-14-0
7	Specific conductance	Specific conductance	N/A*
8	Suspended solids	Total suspended solids (TSS)	N/A*
		Volatile suspended solids (VSS)	N/A*
14	Phenolics (4AAP)	Phenolics (4AAP)**	N/A*
15	Sulphide	Sulphide	N/A*
25	Solvent Extractables	Oil and grease	N/A*

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

SECTOR PRIORITY POLLUTANTS

ANALYTICAL TEST GROUP #	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #'s
9	Total metals	Aluminum	7429-90-5
		Beryllium	7440-41-7
		Boron	7440-42-8
		Cadmium	7440-43-9
		Chromium	7440-47-3
		Cobalt	7440-48-4
		Copper	7440-50-8
		Lead	7439-92-1
		Molybdenum	7439-98-7
		Nickel	7440-02-0
		Silver	7440-22-4
		Thallium	7440-28-0
		Vanadium	7440-62-2
		Zinc	7440-66-6
10	Hydrides	Antimony	7440-36-0
		Arsenic	7440-38-2
		Selenium	7782-49-2
11	Chromium (Hexavalent)	Chromium (Hexavalent)	7440-47-3
12	Mercury	Mercury	7439-97-6
13	Total alkyl lead	Tetra-alkyl lead	78-00-2
		Tri-alkyl lead	Unavailable

ANALYTICAL TEST GROUP #	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #'s
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	79-34-5
		1,1,2-Trichloroethane	79-00-5
		1,1-Dichloroethane	75-34-3
		1,1-Dichloroethylene	75-35-4
		1,2-Dichlorobenzene	95-50-1
		1,2-Dichloroethane (Ethylene dichloride)	107-06-2
		1,2-Dichloropropane	78-87-5
		1,3-Dichlorobenzene	541-73-1
		1,4-Dichlorobenzene	106-46-7
		Bromodichloromethane	75-27-4
		Bromoform	75-25-2
		Bromomethane	74-83-9
		Carbon tetrachloride	56-23-5
		Chlorobenzene	108-90-7
		Chloroform	67-66-3
		Chloromethane	74-87-3
		Cis-1,3-Dichloropropylene	10061-01-5
		Dibromochloromethane	124-48-1
		Ethylene dibromide	106-93-4
		Methylene chloride	75-09-2
		Tetrachloroethylene (Perchloroethylene)	127-18-4
		Trans-1,2-Dichloroethylene	156-60-5
		Trans-1,3-Dichloropropylene	10061-02-6
		Trichloroethylene	79-01-6
		Trichlorofluoromethane	75-69-4
		Vinyl chloride (Chloroethylene)	75-01-4

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

SECTOR PRIORITY POLLUTANTS

ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s'
17	Volatiles, Non-Halogenated	Benzene	71-43-2
		Ethylbenzene	100-41-4
		Styrene	100-42-5
		Toluene	108-88-3
		o-Xylene	95-47-6
		m-Xylene and p-Xylene	108-38-3 & 106-42-3
18	Volatiles, Water Soluble	Acrolein	107-02-8
		Acrylonitrile	107-13-1
19	Extractables, Base Neutral	Acenaphthene	83-32-9
		5-nitro Acenaphthene	602-87-9
		Acenaphthylene	208-96-8
		Anthracene	120-12-7
		Benz(a)anthracene	56-55-3
		Benzo(a)pyrene	50-32-8
		Benzo(b)fluoranthene	205-99-2
		Benzo(g,h,i)perylene	191-24-2
		Benzo(k)fluoranthene	207-08-9
		Biphenyl	92-52-4
		Camphene	79-92-5
		1-Chloronaphthalene	90-13-1
		2-Chloronaphthalene	91-58-7
		Chrysene	218-01-9
		Dibenz(a,h)anthracene	53-70-3
19	Extractables, Base Neutral (continued)	Fluoranthene	206-44-0
		Fluorene	86-73-7
		Indeno(1,2,3-cd)pyrene	193-39-5
		Indole	120-72-9
		1-Methylnaphthalene	90-12-0
		2-Methylnaphthalene	91-57-6
		Naphthalene	91-20-3
		Perylene	198-55-0
		Phenanthrene	85-01-8
		Pyrene	129-00-0
		Benzyl butyl phthalate	85-68-7
		Bis(2-ethylhexyl) phthalate	117-81-7
		Di-n-butyl phthalate	84-74-2
		Di-n-octyl phthalate	117-84-0
		4-Bromophenyl phenyl ether	101-55-3
		4-Chlorophenyl phenyl ether	7005-72-3
		Bis(2-chloroisopropyl)ether	108-60-1
		Bis(2-chloroethyl)ether	111-44-4
		Diphenyl ether	10-184-8
		2,4-Dinitrotoluene	121-14-2
		2,6-Dinitrotoluene	606-20-2
		Bis(2-chloroethoxy)methane	111-91-1
		Diphenylamine	122-39-4
		N-Nitrosodiphenylamine	86-30-6
		N-Nitrosodi-n-propylamine	621-64-7

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

SECTOR PRIORITY POLLUTANTS

ANALYTICAL TEST GROUP #	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s'
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol	4901-51-3
		2,3,4,6-Tetrachlorophenol	58-90-2
		2,3,5,6-Tetrachlorophenol	935-95-5
		2,3,4-Trichlorophenol	15950-66-0
		2,3,5-Trichlorophenol	933-78-8
		2,4,5-Trichlorophenol	95-95-4
		2,4,6-Trichlorophenol	88-06-2
		2,4-Dimethyl phenol	105-67-9
		2,4-Dinitrophenol	51-28-5
		2,4-Dichlorophenol	120-83-2
		2,6-Dichlorophenol	87-65-0
		4,6-Dinitro-o-cresol	534-52-1
		2-Chlorophenol	95-57-8
		4-Chloro-3-methylphenol	59-50-7
		4-Nitrophenol	100-02-7
		m-Cresol	108-39-4
		o-Cresol	95-48-7
		p-Cresol	106-44-5
		Pentachlorophenol	87-86-5
		Phenol	108-95-2
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene	634-66-2
		1,2,3,5-Tetrachlorobenzene	634-90-2
		1,2,4,5-Tetrachlorobenzene	95-94-3
		1,2,3-Trichlorobenzene	87-61-6
		1,2,4-Trichlorobenzene	120-82-1
		2,4,5-Trichlorotoluene	6639-30-1
		Hexachlorobenzene	118-74-1
		Hexachlorobutadiene	87-68-3
		Hexachlorocyclopentadiene	77-47-4
		Hexachloroethane	67-72-1
		Octachlorostyrene	29082-74-4
		Pentachlorobenzene	608-93-5
24	Chlorinated Dibenzo -p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
		Octachlorodibenzo-p-dioxin	326-88-7
		Octachlorodibenzofuran	Unavailable
		Total heptachlorinated dibenzo-p-dioxins	Unavailable
		Total heptachlorinated dibenzofurans	Unavailable
		Total hexachlorinated dibenzo-p-dioxins	34465-46-8
		Total hexachlorinated dibenzofurans	Unavailable
		Total pentachlorinated dibenzo-p-dioxins	Unavailable
		Total pentachlorinated dibenzofurans	Unavailable
		Total tetrachlorinated dibenzo-p-dioxins	Unavailable
		Total tetrachlorinated dibenzofurans	Unavailable
27	Polychlorinated Biphenyls (PCBs) (Total)	PCBs (Total)	Unavailable

' CAS #s - Chemical Abstract Service numbers

" N/A - Not Applicable

"" 4AAP = 4-amino antipyrine method

TABLE 4 - U.S. EPA BATEA PERFORMANCE DATA

POLLUTANT OR POLLUTANT PROPERTY BY PRIORITY POLLUTANT CLASSES	MEDIAN OF LONGTERM WEIGHTED MEANS (PPB)
Halogenated Methanes (C1)	
Carbon tetrachloride	10
Chloroform	10
Methylene chloride	10
Methyl chloride	50
Bromoform	10
Bromodichloromethane	10
Chlorinated C2's	
1,2-Dichloroethane	13.4
1,1,1-Trichloroethane	10
Hexachloroethane	10
1,1,2-Trichloroethane	10
Chloroethane	50
1,1-Dichloroethylene	10
1,2-trans-Dichloroethylene	10
Tetrachloroethylene	10.7
Trichloroethylene	10
Vinyl chloride	10
Chlorinated C3's	
1,2-Dichloropropane	59.4
1,3-Dichloropropylene	36.9
Chlorinated C4's	
Hexachlorobutadiene	10
Chloroalkyl Ethers	
bis(2-chloroisopropyl)ether	10
Metals	
Antimony	158
Arsenic	25.1
Chromium	64.5
Copper	27.7
Lead	100
Mercury	2.03
Nickel	166
Selenium	12
Zinc	69.5
Miscellaneous	
Acrylonitrile	50
Cyanide	64.9

POLLUTANT OR POLLUTANT PROPERTY BY PRIORITY POLLUTANT CLASSES	MEDIAN OF LONGTERM WEIGHTED MEANS (PPB)
Aromatics	
Benzene	10
Ethylbenzene	10
Toluene	10
Polyaromatics	
Acenaphthene	10
Fluoranthene	13.2
Naphthalene	10
Benzo(a)anthracene	10
Benzo(a)pyrene	10
3,4-Benzofluoranthene	10
Chrysene	10
Acenaphthylene	10
Anthracene	10
Fluorene	10
Phenanthrene	10
Pyrene	12.5
Chloroaromatics	
Chlorobenzene	15.9
1,2,4-Trichlorobenzene	26.4
Hexachlorobenzene	10
o-Dichlorobenzene	52.3
m-Dichlorobenzene	21.3
p-Dichlorobenzene	10
Phthalate Esters	
bis(2-Ethylhexyl)phthalate	19.6
Di-n-butyl phthalate	22.2
Diethyl phthalate	44.4
Dimethyl phthalate	10
Nitroaromatics	
2,4-Dinitrotoluene	219
2,6-Dinitrotoluene	255
Nitrobenzene	206
Benzidines	
3,3-Dichlorobenzidine	262
Phenols	
2,4-Dimethylphenol	10.6
Phenol	10

TABLE 4 - U.S. EPA BATEA PERFORMANCE DATA

POLLUTANT OR POLLUTANT PROPERTY BY PRIORITY POLLUTANT CLASSES	MEDIAN OF LONGTERM WEIGHTED MEANS (PPB)
Nitrophenols	
2-Nitrophenol	24
4-Nitrophenol	50
2,4-Dinitrophenol	50
4,6-Dinitro-o-cresol	20
Chlorophenols	
2,4,6-Trichlorophenol	65.9
2-Chlorophenol	10
2,4-Dichlorophenol	16.9
Pentachlorophenol	50

Table 5 - Summary of the Parameter/Frequency Assignment Rules

I ALL SITES

A) PROCESS/COMBINED/BATCH DISCHARGE EFFLUENTS

DAILY	pH, Specific Conductance (continuous monitoring preferred for both)
THRICE WEEKLY	DOC, TSS, TOC (if TSS >15 mg/L)
WEEKLY	Oil & Grease

B) FINAL DISCHARGES* (Process, Combined and Batch discharge effluents)

DAILY	DOC, pH, Specific Conductance (Continuous monitoring preferred)	
WEEKLY	Phosphorus	
MONTHLY	Toxicity - Rainbow Trout	- 96 h LC50 - trigger to pass/fail if fish mortality in the first 3 monthly LC50 tests, or in any subsequent 3 consecutive monthly LC50 tests, does not exceed 2 at each dilution
	Daphnia magna	- 48 h LC50 - no trigger to pass/fail

II SITE SPECIFIC

A) PROCESS/COMBINED/BATCH DISCHARGE EFFLUENTS

DAILY	VSS (biological treatment effluents only)
THRICE WEEKLY	Phosphorus and Total Nitrogen (biological treatment effluents only) Total NH_3 >10 mg/L (NO_3^- + NO_2^-) >10 mg/L Phenolics (4AAP) >10 µg/L OCM Sector List Priority Pollutants > Long Term Medians (LTM) (Table 4)
WEEKLY	Phosphorus >100 µg/L Phenolics > MDL OCM Sector List Priority Pollutants > Method Detection Limits (MDL) < LTM
MONTHLY	Analytical Test Group 20 (if Phenolics >10 µg/L) Complete Analytical Test Group (if one group member > MDL) OCM Sector List Priority Pollutants based on use/release (See Table 3)
QUARTERLY/ SEMI-ANNUALLY	All Conventional Pollutants (See Table 3) OCM Sector Priority Pollutant List (See Table 3) Open Characterization - Organic/Elemental

B) OTCW/STORM WATER/WASTE DISPOSAL SITE EFFLUENTS

MONTHLY OR AT DISCHARGE	DOC, pH, Specific Conductance, TSS, Phosphorus, Oil & Grease Selected other Conventional Pollutants based on source chemicals Selected OCM Sector List Priority Pollutants based on source chemicals	
QUARTERLY	Toxicity - Rainbow Trout - 96 h LC50 96 h; Daphnia magna - 48 h LC50 48 h	- trigger to pass/fail if the mortality for the first quarterly LC50 tests for each species does not exceed 2 at each dilution

C) EMERGENCY OVERFLOWS

AT DISCHARGE	DOC, pH, Specific Conductance, TSS, Phosphorus, Oil & Grease Selected other Conventional Pollutants based on source chemicals Selected OCM Sector List Priority Pollutants based on source chemicals

TABLE 6 - PROBABILITY OF DETECTING AT LEAST ONE SAMPLE ABOVE THE DETECTION LIMIT

SINGLE SAMPLE PROBABILITY OF		NUMBER OF SAMPLES								RATIO OF DETECT/ (DETECT + NON-DETECT) (D/D+ND)
DETECT (P)	NON-DETECT (Q)	12	11	10	9	8	6	4	2	
0.5	0.5	0.999	0.999	0.999	0.998	0.996	0.984	0.937	0.750	1/2
0.4	0.6	0.998	0.996	0.994	0.990	0.983	0.953	0.870	0.640	2/5
0.3	0.7	0.986	0.980	0.972	0.960	0.942	0.882	0.759	0.510	3/10
0.2	0.8	0.931	0.914	0.893	0.866	0.832	0.738	0.590	0.360	1/5
0.1	0.9	0.717	0.686	0.651	0.613	0.569	0.468	0.344	0.190	1/10
0.05	0.95	0.460	0.431	0.401	0.370	0.337	0.265	0.185	0.098	1/20
0.02	0.98	0.215	0.199	0.183	0.166	0.149	0.114	0.078	0.040	1/50
0.01	0.99	0.113	0.105	0.095	0.086	0.077	0.058	0.039	0.019	1/100

The table shows the probability of a sample with a parameter above MDL for the number of samples tested.

TABLE 7 - OCM SECTOR PLANT GROUPINGS FOR CHARACTERIZATION

GROUP	CHARACTERISTICS	PLANT SITES
A	- simple process	Borg-Warner (Canada) Ltd.
	- single product	Du Pont Canada Inc. (Corunna)
	- polymers only	Novacor Chemicals Ltd.
	- continuous process	Rohm & Haas Canada Inc.
	- no chlorinated materials	
B	- moderate to complex process	B. F. Goodrich Canada Inc.
	- multi-product sites	BTL Industries Inc.
	- continuous and batch processes	Canadian Oxy Chemicals Ltd.
	- chlorinated materials	Celanese Canada Inc.
	- site in concern area	Cornwall Chemical Ltd.
	- history of environmental problems	Courtaulds Fibres Canada
		Courtaulds Films
		Domtar Inc.
		Dow Chemical Canada Inc.
		Du Pont Canada Inc. (Kingston)
		Du Pont Canada Inc. (Maitland)
		ESSO Chemical Canada, a Division of Imperial Oil Ltd.
		Ethyl Canada Inc.
		Polysar Ltd.
		Uniroyal Chemical Ltd.

NOTE: The characterization requirements for Group A plant sites may be increased to Group B levels in cases where less than four days of pre-regulation monitoring data was provided to the Ministry by the sites.

PART C

THE EFFLUENT MONITORING REGULATION
FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR
ONTARIO REGULATION 209/89

REGULATION MADE UNDER THE ENVIRONMENTAL PROTECTION ACT

ONTARIO REGULATION 209/89

EFFLUENT MONITORING - ORGANIC CHEMICAL MANUFACTURING SECTOR

TABLE OF CONTENTS **PAGE**

Section 1 -	Definitions	C-2
Section 2 -	Purpose	C-2
Section 3 -	Application	C-3
Section 4 -	Sampling Points	C-4
Section 5 -	Characterization	C-5
Section 6 -	Daily Monitoring	C-6
Section 7 -	Thrice Weekly Monitoring	C-7
Section 8 -	Weekly Monitoring	C-7
Section 9 -	Monthly Monitoring	C-8
Section 10 -	Monthly Monitoring - Once-Through Cooling Water	C-8
Section 11 -	Monthly Monitoring - Storm Water	C-8
Section 12 -	Monthly Monitoring - Waste Disposal Site Effluent	C-9
Section 13 -	Event Monitoring - Emergency Overflow	C-9
Section 14 -	Quality Control Monitoring	C-9
Section 15 -	Toxicity Testing	C-11
Section 16 -	Flow Measurement	C-12
Section 17 -	Reporting	C-14
Section 18 -	Timing	C-16
Schedule AA		C-17
Site-Specific Monitoring Schedules A - S		C-24

DEFINITIONS

1.-(1) In this Regulation,

"characterization" means the analysis of a sample to identify and quantify all of the parameters in Schedule AA;

"combined effluent" means any intentional combination of process effluent or process materials with cooling water;

"final discharge sampling point" means a location in a process effluent, combined effluent or batch discharge effluent stream that discharges to a surface watercourse situated,

(a) before the place of discharge to the surface watercourse, and

(b) downstream of all additions of effluent to that stream;

"General Effluent Monitoring Regulation" means Ontario Regulation 695/88;

"process change" means any change in equipment, production processes or treatment processes;

"quarterly" means once in each three month period beginning on the first day of January, once in each three month period beginning on the first day of April, once in each three month period beginning on the first day of July and once in each three month period beginning on the first day of October;

"semi-annual period" means a period of six months beginning on the first day of January or July;

"semi-annually" means once in each six month period beginning on the first day of January and once in each six month period beginning on the first day of July.

(2) The definitions in section 1 of the General Effluent Monitoring Regulation that are not redefined in this Regulation apply to this Regulation.

PURPOSE

2. The purpose of this Regulation is to establish a data base on effluent quality in the Organic Chemical Manufacturing Sector that, along with other pertinent information, will be used to develop effluent limits for that sector and to quantify the mass loadings of monitored contaminants being discharged by that sector into surface watercourses.

APPLICATION

3.-(1) This Regulation applies only with respect to the plants listed in subsection (2).

(2) The site-specific monitoring schedule for each plant is as follows:

Plant	Location	Owner as of February 3, 1989	Site-Specific Monitoring Schedule
Niagara Site	Thorold	B.F. Goodrich Canada Inc.	A
Belleville Plant	Belleville	BTL Specialty Resins, A Division of Bakelite Thermosets Ltd.	B
Thermoset Division	Fort Erie	CanadianOxy Chemicals Ltd.	C
Millhaven Site	Millhaven	Celanese Canada Inc.	D
Cornwall Plant	Cornwall	Cornwall Chemicals Limited	E
Cornwall Plant	Cornwall	Courtaulds Fibres Canada, a Division of Courtaulds Fibers Inc.	F
Cornwall Plant	Cornwall	Courtaulds Films Canada, a Division of International Paints (Canada) Limited	G
Longford Plant	Longford Mills	Domtar Inc.	H
Sarnia Div.	Sarnia	Dow Chemical Canada Inc.	I
St. Clair River Site	Corunna	Du Pont Canada Inc.	J
Kingston Site	Kingston	Du Pont Canada Inc.	K
Maitland Site	Maitland	Du Pont Canada Inc.	L
Sarnia Chemical Plant	Sarnia	Esso Chemical Canada, a Division of Imperial Oil Ltd.	M
Sarnia Plant	Corunna	Ethyl Canada Inc.	N
Normar Plant	Cobourg	GE Plastics Canada Ltd.	O
Moore Plant	Mooretown	Novacor Chemicals Ltd.	P
Sarnia Site	Sarnia	Polysar Limited	Q

Morrisburg Plant	Morrisburg	Rohm and Haas Canada Inc.	R
Elmira Plant	Elmira	Uniroyal Chemical Ltd.	S

(3) This Regulation is a Sectoral Effluent Monitoring Regulation within the meaning of the General Effluent Monitoring Regulation.

(4) Each direct discharger shall carry out the monitoring obligations, including the sampling, analysis, toxicity testing, flow measurement, recording and reporting obligations of this Regulation, in accordance with the General Effluent Monitoring Regulation.

(5) Each direct discharger shall carry out the sampling and analytical obligations in relation to boron, bromodichloromethane, ethylbenzene, biphenyl, di-n-octyl phthalate and diphenyl ether in accordance with Notes A to F of Schedule AA.

(6) An obligation on a direct discharger to do a thing under this Regulation is discharged if another person has done it on the direct discharger's behalf.

(7) Each direct discharger shall notify the Director in writing of any change of name or ownership of its plant within thirty days after the day this Regulation comes into force or within thirty days after any such change.

SAMPLING POINTS

4.-(1) Each direct discharger shall establish a sampling point on each effluent stream named in the site-specific monitoring schedule for that discharger's plant, as follows:

1. A batch discharge sampling point on each batch discharge effluent stream.

2. A combined effluent sampling point on each combined effluent stream.

3. A final discharge sampling point on each process effluent, combined effluent or batch discharge effluent stream that discharges to a surface watercourse.

4. A once-through cooling water sampling point on each once-through cooling water effluent stream.

5. A process effluent sampling point on each process effluent stream.

6. A storm water sampling point on each storm water effluent stream.

7. A waste disposal site effluent sampling point on each waste disposal site effluent stream.

8. An emergency overflow effluent sampling point on each emergency overflow effluent stream.

(2) Each direct discharger shall use the sampling points established under subsection (1) for all sampling required by this Regulation, except that a a direct discharger may use alternate sampling points where that is acceptable to the Director.

(3) Where there is continuity of flow among a process effluent, combined effluent or batch discharge effluent stream of a direct discharger, that direct discharger shall collect all samples required by sections 5, 7, 8 and 9 in respect of those particular streams on the same day, to the extent that the coincidence or overlap of frequency requirements specified in the site-specific monitoring schedule for that discharger's plant permits.

(4) Except as otherwise specifically provided, sets of samples required to be collected under this Regulation need not be collected on the same day.

(5) Each direct discharger shall collect each sample required to be collected from a process or combined effluent sampling point, as a composite sample throughout an operating day in accordance with subsection 3(4) of the General Effluent Monitoring Regulation.

(6) Each direct discharger shall submit for analysis the sample volume for each analytical test group that is required by the laboratory to meet the analytical method detection limits specified in Column 6 of Parts A and B of Schedule 3 of the General Effluent Monitoring Regulation.

(7) Each direct discharger carrying out the requirements of subsection (6) need not comply with subsection 3(23) of the General Effluent Monitoring Regulation.

CHARACTERIZATION

5.-(1) Each direct discharger shall collect a set of samples sufficient to perform all of the characterization and open characterization required by subsections (4), (6), (7) and (8) from each process effluent, combined effluent and batch discharge effluent sampling point of that discharger,

(a) at the characterization sampling frequencies and minimum intervals specified in the site-specific monitoring schedule for that discharger's plant; and

(b) once within thirty days after every process change that is expected to significantly and adversely affect the quality of effluent at that sampling point.

(2) For the purpose of subsection 4(3) of the General Effluent Monitoring Regulation, samples collected under subsection (1) are collected for characterization.

(3) Clause (1)(b) does not apply to experimental process changes of less than thirty days in duration.

(4) Each direct discharger shall analyze each set of samples collected under clauses (1)(a) and (1)(b) for all of the parameters in Column 2 of Schedule AA.

(5) Each direct discharger shall collect all samples required by clause 1(a) on the same day except to the extent that this is impossible because of a lack of coincidence or overlap of frequency requirements specified in the site-specific monitoring schedule for that discharger's plant for characterization sampling for analytical test group 24, with frequency requirements specified in that schedule for characterization sampling for all other analytical test groups.

(6) Despite subsection (4), where the characterization sampling frequencies specified in the site-specific monitoring schedule for a direct discharger's plant require characterization sampling for all analytical test groups other than analytical test group 24 on a day on which characterization sampling for analytical test group 24 is not required by that schedule, the samples collected under clause 1(a) on that day need not be analyzed for analytical test group 24.

(7) Despite subsection (4), where the characterization sampling frequencies specified in the site-specific monitoring schedule for a direct discharger's plant require characterization sampling for analytical test group 24 on a day on which characterization sampling for all other analytical test groups is not required by that schedule, the samples collected under clause 1(a) on that day need only be analyzed for analytical test group 24.

(8) Each direct discharger shall perform an open characterization on each set of samples collected under clause (1)(a).

(9) A direct discharger is only required to fulfill the requirements of clause 1(a) throughout one twelve month period.

DAILY MONITORING

6.-(1) Subject to subsection (2), at each final discharge sampling point, each direct discharger shall,

(a) continuously sample and analyze, using an on-line analyzer, for the parameters in analytical test groups 3, 5a and 7 in Schedule AA; or

(b) during each operating day, collect a set of samples and analyze those samples for the parameters specified in clause (1)(a).

(2) If a direct discharger is unable to carry out the requirements of subsection (1) at a final discharge sampling point, that discharger shall instead carry out those requirements at each sampling point on each effluent stream that flows into the stream on which the final discharge sampling point is located, and shall analyze those samples for the parameters specified in clause (1)(a).

(3) During each operating day, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge effluent sampling point of that discharger, and shall analyze each such set for the parameters indicated in the daily column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(4) When on an operating day a set of samples is collected under subsection (3) from a sampling point at which a collection or analysis was performed on the same day under subsections (1) or (2), the direct discharger need not analyze the set of samples for parameters for which an analysis was performed under subsections (1) or (2).

(5) Clause (1)(b) and subsections (2) and (3) do not apply in respect of any day on which a sufficient volume of sample cannot be collected because of the collection of inspection samples.

THRICE-WEEKLY MONITORING

7. On at least three operating days in each week, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge effluent sampling point of that discharger and shall analyze each such set for the parameters indicated in the thrice-weekly column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

WEEKLY MONITORING

8.-(1) On at least one operating day in each week, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge effluent sampling point of that discharger and shall analyze each such set for the parameters indicated in the weekly column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(2) Each set of samples collected under subsection (1) shall be collected on one of the days on which a sample is collected under section 7 from the same sampling point.

(3) For the purpose of subsection (1), a set of samples collected from a sampling point after the first set of samples is collected from that sampling point under subsection (1) shall be collected no sooner than two days after the previous collection of a set of samples from that sampling point.

MONTHLY MONITORING

9.-(1) On at least one operating day in each month, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge effluent sampling point of that discharger and shall analyze each such set for the parameters indicated in the monthly column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(2) Each set of samples collected under subsection (1) shall be collected on one of the days on which a sample is collected under section 8 from the same sampling point.

(3) For the purpose of subsection (1), a set of samples collected from a sampling point after the first set of samples is collected from that sampling point under subsection (1) shall be collected no sooner than two weeks after the previous collection of a set of samples from that sampling point.

MONTHLY MONITORING - ONCE-THROUGH COOLING WATER

10.-(1) On at least one day in each month, on a day on which a set of samples required by subsection 9(1) is collected, each direct discharger shall collect a set of samples from each once-through cooling water sampling point of that discharger and shall analyze each such set for the parameters indicated in the column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(2) For the purpose of subsection (1), a set of samples collected from a sampling point after the first set of samples is collected from that sampling point under subsection (1) shall be collected no sooner than two weeks after the previous collection of a set of samples from that sampling point.

MONTHLY MONITORING - STORM WATER

11.-(1) Subject to subsections (2) and (3), on at least one operating day in each month in which there is a storm event on an operating day, each direct discharger shall collect a set of samples from each affected storm water sampling point of that discharger during a discharge of storm water related to the storm event and shall analyze each such set for the parameters indicated in the column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(2) For the purpose of subsection (1), where a direct discharger has been unable to collect a set of samples from a storm water sampling point of that discharger during any month in which there was a storm event because of insufficient flow, that discharger shall collect a compensating set of samples from that sampling point during a subsequent discharge of storm water in respect of which a set of samples is not collected under subsection (1) and shall analyze each such set for the parameters indicated in the column, for the

stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(3) Each direct discharger shall make every reasonable effort to ensure that samples collected under subsection (1) in at least two of the months of January, February, March, April and May are collected during a thaw, with collection during the second thaw to occur no sooner than two weeks after collection during the first thaw.

MONTHLY MONITORING - WASTE DISPOSAL SITE EFFLUENT

12. On one day in each month during which there is a discharge of waste disposal site effluent, each direct discharger shall collect a set of samples from each affected waste disposal site effluent sampling point of that discharger during a discharge of waste disposal site effluent and shall analyze each such set for the parameters indicated in the column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

EVENT MONITORING - EMERGENCY OVERFLOW

13.-(1) During each emergency overflow, each direct discharger shall collect a set of samples from each affected emergency overflow effluent sampling point of that discharger and shall analyze each such set for the parameters indicated in the column, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(2) Subsection (1) does not apply if the collection of samples would result in extraordinary danger to health or safety.

QUALITY CONTROL MONITORING

14.-(1) Each direct discharger shall select, for the purpose of this section, the process effluent stream in respect of which the monthly column of the site-specific monitoring schedule for that discharger's plant indicates the largest number of parameters to be analyzed for in analytical test groups 16 to 20, 23, 24 and 27.

(2) If a direct discharger's plant has no process effluent stream in respect of which a parameter in analytical test groups 16 to 20, 23, 24 and 27 is required to be analyzed for, the discharger shall instead select the process effluent stream in respect of which the monthly column of the site specific monitoring schedule indicates the largest number of parameters to be analyzed for in all analytical test groups.

(3) If a direct discharger's plant has no process effluent stream, the discharger shall instead select the combined effluent stream in respect of which the monthly column of the site specific monitoring schedule for that

discharger's plant indicates the largest number of parameters to be analyzed for in analytical test groups 16 to 20, 23, 24 and 27.

(4) If a direct discharger's plant has no process effluent stream and has no combined effluent stream in respect of which a parameter in analytical test groups 16 to 20, 23, 24 and 27 is required to be analyzed for, the discharger shall instead select the combined effluent stream in respect of which the monthly column of the site-specific monitoring schedule indicates the largest number of parameters to be analyzed for in all analytical test groups.

(5) Each direct discharger shall prepare each travelling spiked blank sample required to be analyzed by this section with a standard solution containing at least the parameters to be analyzed for.

(6) For the purposes of subsections (7) and (8) where the direct discharger collects a composite sample using an automatic composite sampling device, the direct discharger may, instead of collecting a duplicate sample, remove an aliquot from each sample container used to collect the sample, in which case the direct discharger shall analyze the aliquots as if they were duplicate samples.

(7) Once in each month, on a day on which samples are collected under section 9, each direct discharger shall collect a duplicate sample for each sample required to be collected on that day by sections 6 and 7 from the sampling point on the effluent stream selected under subsections (1) to (4) and shall analyze the set of duplicate samples for the parameters indicated in the daily and thrice-weekly columns, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(8) Once in each quarter, on a day on which duplicate samples are collected under subsection (7), each direct discharger shall collect a duplicate sample for each sample required to be collected on that day by sections 8 and 9 from the sampling point on the effluent stream selected under subsections (1) to (4) and shall analyze the set of duplicate samples for the parameters indicated in the weekly and monthly columns, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(9) Once in each month, on a day on which samples are collected under subsection (7), each direct discharger shall prepare, process and return to the laboratory a travelling blank sample for each sample required to be collected on that day by sections 6 and 7 from the sampling point on the effluent stream selected under subsections (1) to (4) and shall analyze the set of travelling blank samples for the parameters indicated in the daily and thrice-weekly columns, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(10) Despite subsection (9), a direct discharger need not analyze a travelling blank sample for parameters in analytical test groups 3 and 8.

(11) Once in each quarter, on a day on which duplicate samples are collected under subsection (8), each direct discharger shall prepare, process and return to the laboratory a travelling blank sample for each sample required to be collected on that day by sections 8 and 9 from the sampling point on the effluent stream selected under subsections (1) to (4) and shall analyze the set of travelling blank samples for the parameters indicated in the weekly and monthly columns, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(12) Once in each month, on a day on which duplicate samples are collected under subsection (7), each direct discharger shall prepare, process and return to the laboratory a travelling spiked blank sample for each sample required to be collected on that day by sections 6 and 7 from the sampling point on the effluent stream selected under subsections (1) to (4) and shall analyze the set of travelling spiked blank samples for the parameters in analytical test groups 16 to 20, 23, 24 and 27 indicated in the daily and thrice-weekly columns, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

(13) Once in each quarter, on a day on which duplicate samples are collected under subsection (8), each direct discharger shall prepare, process and return to the laboratory a travelling spiked blank sample for each sample required to be collected on that day by sections 8 and 9 from the sampling point on the effluent stream selected under subsections (1) to (4) and shall analyze the set of travelling spiked blank samples for the parameters in analytical test groups 16 to 20, 23, 24 and 27 indicated in the weekly and monthly columns, for the stream from which the set was collected, of the site-specific monitoring schedule for that discharger's plant.

TOXICITY TESTING

15.-(1) Each direct discharger shall collect a sample from each final discharge sampling point of that discharger once in each month on the same day as the set of samples is collected under section 9 from that sampling point and shall perform thereon a fish toxicity test.

(2) If the tests performed under subsection (1) on all samples from a final discharge sampling point in three consecutive months result in mortality for no more than two out of ten fish at all effluent concentrations, a direct discharger may thereafter perform the tests required by subsection (1), on the samples from that sampling point, on 100 per cent undiluted samples only.

(3) If a test performed under subsection (2) on any sample from a final discharge sampling point results in mortality for more than two out of ten fish, subsection (2) ceases to apply and continues not to apply, to samples from that sampling point, until the tests performed under subsection (1) on all samples from that sampling point in a further three consecutive months result in mortality for no more than two out of ten fish at all effluent concentrations.

(4) Each direct discharger shall collect a sample from each final discharge sampling point of that discharger once in each month, on the same day as the sample is collected under subsection (1) from that sampling point and shall perform thereon a Daphnia magna acute lethality toxicity test.

(5) Each direct discharger shall collect the sample required by subsection (4) together in the same container or set of containers with the fish toxicity test sample.

(6) Each direct discharger shall collect a sample from each once-through cooling water sampling point of that discharger once in each quarter on the same day as one of the sets of samples required by section 10 is collected from that sampling point and shall perform, on each sample required by this subsection,

(a) a fish toxicity test; and

(b) a Daphnia magna acute lethality toxicity test.

(7) If the tests performed in the first quarter under subsection (6) on all samples from a once-through cooling water sampling point result in mortality for no more than two out of ten test species for both tests at all effluent concentrations, a direct discharger may thereafter perform the tests required by subsection (6) on the samples from that sampling point on 100 per cent undiluted samples only.

(8) If a test performed under subsection (7) on any sample from a once-through cooling water sampling point results in mortality for more than two out of ten test species, subsection (7) ceases to apply in respect of samples from that sampling point.

(9) A direct discharger is only required to fulfill the requirements of subsection (6) throughout one twelve month period.

FLOW MEASUREMENT

16.-(1) Subject to subsection (2), each direct discharger shall continuously measure the flow of each process effluent and combined effluent stream of that discharger at a location or set of locations representative of the flow at the sampling point established for that stream and shall continuously record the measured flow.

(2) Where there is no continuous flow measurement device in place on a combined effluent stream, each direct discharger shall estimate, on each operating day, the total daily flow of the stream and shall record the estimated flow.

(3) Where the flow of a process effluent or a combined effluent stream cannot be continuously measured on any operating day because of equipment malfunction and all reasonable care has been taken to avoid and correct the malfunction, the direct discharger may fulfill the requirement of subsection (1)

by estimating the total volume of effluent discharged on that operating day from that stream and recording that estimate.

(4) Each direct discharger shall, at the time of each sampling under this Regulation from a batch discharge or once-through cooling water effluent stream of that discharger, measure or estimate the flow of that stream at a location or set of locations representative of the flow at the sampling point established for that stream and shall record the measured or estimated data.

(5) Each direct discharger shall measure or estimate the duration and approximate volume of every storm water discharge, waste disposal site effluent discharge and emergency overflow in respect of which the discharger has taken a sample under this Regulation and shall record the measured or estimated data.

(6) Subsection 6(6) of the General Effluent Monitoring Regulation does not apply in respect of measurements or estimates of volume of discharges of storm water.

(7) Subject to subsection (9), each direct discharger shall demonstrate by calibration, performed no earlier than 365 days before the filing of this Regulation, that each primary flow measuring device used to measure the flow of any process effluent stream for the purposes of this Regulation meets the accuracy requirement of subsection 6(1) of the General Effluent Monitoring Regulation.

(8) Subject to subsection (10), each direct discharger shall demonstrate by calibration, performed no earlier than 365 days before the filing of this Regulation, that each flow measuring device used to measure the flow of any combined effluent stream for the purposes of this Regulation meets the accuracy requirement of subsection 6(3) of the General Effluent Monitoring Regulation.

(9) Where a direct discharger demonstrates to the Director by means of a certified report of a registered professional engineer of the Province of Ontario that a primary flow measuring device used to measure the flow of a process effluent stream has been designed and installed in accordance with the standards of a national or international standards setting organization, that primary device will be deemed capable of meeting the accuracy requirement in subsection 6(1) of the General Effluent Monitoring Regulation.

(10) Where a direct discharger demonstrates to the Director by means of a certified report of a registered professional engineer of the Province of Ontario that a flow measuring device used to measure the flow of a combined effluent stream has been designed and installed in accordance with the standards of a national or international standards setting organization, that flow measuring device will be deemed capable of meeting the accuracy requirement in subsection 6(3) of the General Effluent Monitoring Regulation.

REPORTING

17.-(1) Within seven days after this subsection comes into force, each direct discharger shall submit an initial report to the Director in respect of that direct discharger's plant.

(2) Each direct discharger shall report in writing any significant changes in respect of the information submitted under subsection (1) to the Director within thirty days after the end of the month during which the change occurs.

(3) With respect to each sample, each direct discharger shall report to the Director the results of all analyses performed by or on behalf of the direct discharger under sections 5 to 14 of this Regulation and under subsection 4(18) of the General Effluent Monitoring Regulation, including all positive numerical values at or above the analytical method detection limits calculated by the laboratory performing the analysis, together with the date on which each sample was collected and the method used to collect each sample.

(4) Each direct discharger shall, in accordance with subsection 7(6) of the General Effluent Monitoring Regulation, report to the Director the toxicity test information obtained under section 15, together with the date on which each sample was collected under section 15.

(5) The information required to be reported under subsection (4) constitutes results of analyses within the meaning of subsection 7(2) of the General Effluent Monitoring Regulation.

(6) Each direct discharger shall, with respect to each flow measuring device used in meeting the requirements of this Regulation, submit to the Director documentation of any calibration or certification of accuracy required by subsections 16(7) to 16(10) of this Regulation and subsection 6(2) of the General Effluent Monitoring Regulation, no later than thirty days before the first use of the device for the purposes of this Regulation.

(7) Subject to subsection (8), each direct discharger shall, with respect to each method, device or calculation for flow measurement or estimation used in meeting the requirements of this Regulation, submit to the Director, no later than thirty days before the first use of the method, device or calculation for the purposes of this Regulation, documentation sufficient to satisfy the Director that the method, device or calculation complies with the accuracy requirements of subsections 6(3) and (6) of the General Effluent Monitoring Regulation.

(8) Each direct discharger shall, no later than thirty days before this Regulation comes into force, submit to the Director a description of the methods and calculations to be used in measuring or estimating the volume of discharge of storm water under subsection 16(5), together with an assessment of the accuracy of those methods and calculations.

(9) Each direct discharger shall submit to the Director documentation of each calibration performed under subsection 6(7) of the General Effluent Monitoring Regulation, within thirty days after the day on which the calibration was performed or within thirty days after this Regulation comes into force.

(10) Each direct discharger shall report to the Director the flow measurement information recorded under this Regulation in respect of each process effluent stream, combined effluent stream, batch discharge effluent stream and once-through cooling water effluent stream of that discharger and the date on which each flow was measured.

(11) Each direct discharger shall report to the Director the date, approximate duration and amount of rainfall of each storm event that occurs while this subsection is in force.

(12) Each direct discharger shall report to the Director the date, approximate duration and approximate volume of each discharge of storm water for which a set of samples is collected under section 11.

(13) Each direct discharger shall report to the Director the date, duration and approximate volume of each discharge of waste disposal site effluent that occurs while this subsection is in force.

(14) Each direct discharger shall report to the Director the date, location, duration and approximate volume of effluent discharged during each emergency overflow that occurs while this Regulation is in force.

(15) Each direct discharger shall submit the reports referred to in subsections (10) to (14) to the Director in writing within sixty days after the day on which the information was recorded.

(16) Each direct discharger shall submit to the Director, at least thirty days before collection of the first sample in each month, a schedule of sampling dates and times by sampling point location for all sampling required by sections 5, 9 and 10.

(17) Each direct discharger shall make every reasonable effort to follow the schedule submitted by the direct discharger under subsection (16) but if the schedule cannot be followed as submitted, the direct discharger shall notify the Director promptly of any change in dates or times.

(18) Within thirty days after the end of each quarter, each direct discharger shall submit a report to the Director stating the quantities of chemicals added to once-through cooling water in the previous quarter and the dates on which these additions occurred.

(19) Subject to subsection 3(6) of the General Effluent Monitoring Regulation, each direct discharger shall, no later than one year after this Regulation comes into force, submit a report to the Director describing the variation in daily flow for a period of six months for each process effluent

stream from which samples are collected other than by means of an automatic flow proportional composite sampling device.

(20) The report referred to in subsection (19) shall include the raw data and calculation methods used to produce the report.

(21) Each direct discharger shall keep records of all sampling required by this Regulation, including, for each sample, the date and time of collection, sampling procedures used, the amount of sample dilution by preservative if dilution exceeds 1 per cent and any incident likely to affect an analytical result.

(22) Each direct discharger shall develop a maintenance schedule for all sampling equipment and shall record the dates on which any maintenance action was taken, together with a description of the action.

(23) Each direct discharger shall keep records of all analytical methods used in meeting the requirements of this Regulation.

(24) Each direct discharger shall submit a report to the Director detailing the date, duration and cause of each sampling, toxicity testing, analytical and flow measurement malfunction or other problem that interferes with fulfilling the requirements of this Regulation, together with a description of any remedial action taken, within sixty days after the day on which the malfunction or problem occurs.

(25) Each direct discharger shall keep all records and reports, required by this Regulation to be kept or made, for a period of two years following the date of the last report submitted to the Director under this section.

TIMING

18.-(1) This Regulation, except sections 1 to 3 and subsections 17(1), (2), (6), (7), (8), (16) and (17), comes into force on the 1st day of October, 1989.

(2) Sections 1 to 3 and subsections 17(1), (2), (6), (7), (8), (16) and (17) come into force on the 1st day of July, 1989.

(3) Sections 5, 7 to 13 and 15 and subsections 17(11) to (13) are revoked on the 1st day of October, 1990.

(4) Sections 4 to 16 of this Regulation cease to apply in respect of a sampling point of a direct discharger where an approval is granted under subsection 24(1) of the Ontario Water Resources Act,

(a) to route the effluent stream, on which the sampling point is established, to a sewage works; or

(b) to eliminate the effluent stream on which the sampling point is established.

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
#	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s '
1	Chemical Oxygen Demand	Chemical oxygen demand (COD)	N/A
2	Total cyanide	Total cyanide	57-12-5
3	Hydrogen ion (pH)	Hydrogen ion (pH)	N/A
4a	Nitrogen	Ammonia plus Ammonium	N/A
		Total Kjeldahl nitrogen	N/A
4b		Nitrate + Nitrite	N/A
5a	Organic carbon	Dissolved organic carbon (DOC)	N/A
5b		Total organic carbon (TOC) (NOTE 1)	N/A
6	Total phosphorus	Total phosphorus	7723-14-0
7	Specific conductance	Specific conductance	N/A
8	Suspended solids	Total suspended solids (TSS)	N/A
		Volatile suspended solids (VSS)	N/A
9	Total metals	Aluminum	7429-90-5
		Beryllium	7440-41-7
		Boron (NOTE A)	7440-42-8
		Cadmium	7440-43-9
		Chromium	7440-47-3
		Cobalt	7440-48-4
		Copper	7440-50-8
		Lead	7439-92-1
		Molybdenum	7439-98-7
		Nickel	7440-02-0

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s '
9	Total metals (continued)	Silver	7440-22-4
		Thallium	7440-28-0
		Vanadium	7440-62-2
		Zinc	7440-66-6
10	Hydrides	Antimony	7440-36-0
		Arsenic	7440-38-2
		Selenium	7782-49-2
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	7440-47-3
12	Mercury	Mercury	7439-97-6
13	Total alkyl lead (NOTE 3)	Tetra-alkyl lead	78-00-2
		Tri-alkyl lead	N/A
14	Phenolics (4AAP)	Phenolics (4AAP)*	N/A
15	Sulphide	Sulphide	N/A
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	79-34-5
		1,1,2-Trichloroethane	79-00-5
		1,1-Dichloroethane	75-34-3
		1,1-Dichloroethylene	75-35-4
		1,2-Dichlorobenzene	95-50-1
		1,2-Dichloroethane (Ethylene dichloride)	107-06-2
		1,2-Dichloropropane	78-87-5
		1,3-Dichlorobenzene	541-73-1
		1,4-Dichlorobenzene	106-46-7
		Bromodichloromethane (NOTE B)	75-27-4
		Bromoform	75-25-2
		Bromomethane	74-83-9

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s '
16	Volatiles, Halogenated (continued)	Carbon tetrachloride	56-23-5
		Chlorobenzene	108-90-7
		Chloroform	67-66-3
		Chloromethane	74-87-3
		Cis-1,3-Dichloropropylene	10061-01-5
		Dibromochloromethane	124-48-1
		Ethylene dibromide	106-93-4
		Methylene chloride	75-09-2
		Tetrachloroethylene (Perchloroethylene)	127-18-4
		Trans-1,2-Dichloroethylene	156-60-5
		Trans-1,3-Dichloropropylene	10061-02-6
		Trichloroethylene	79-01-6
		Trichlorofluoromethane	75-69-4
		Vinyl chloride (Chloroethylene)	75-01-4
17	Volatiles, Non-Halogenated	Benzene	71-43-2
		Ethylbenzene (NOTE C)	100-41-4
		Styrene	100-42-5
		Toluene	108-88-3
		o-Xylene	95-47-6
		m-Xylene and p-Xylene (NOTE 4)	108-38-3 & 106-42-3
18	Volatiles, Water Soluble	Acrolein	107-02-8
		Acrylonitrile	107-13-1

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s '
19	Extractables, Base Neutral	Acenaphthene	83-32-9
		5-nitro Acenaphthene	602-87-9
		Acenaphthylene	208-96-8
		Anthracene	120-12-7
		Benz(a)anthracene	56-55-3
		Benzo(a)pyrene	50-32-8
		Benzo(b)fluoranthene	205-99-2
		Benzo(g,h,i)perylene	191-24-2
		Benzo(k)fluoranthene	207-08-9
		Biphenyl (NOTE D)	92-52-4
		Camphene	79-92-5
		1-Chloronaphthalene	90-13-1
		2-Chloronaphthalene	91-58-7
		Chrysene	218-01-9
		Dibenz(a,h)anthracene	53-70-3
		Fluoranthene	206-44-0
		Fluorene	86-73-7
		Indeno(1,2,3-cd)pyrene	193-39-5
		Indole	120-72-9
		1-Methylnaphthalene	90-12-0
		2-Methylnaphthalene	91-57-6
		Naphthalene	91-20-3
		Perylene	198-55-0
		Phenanthrene	85-01-8
		Pyrene	129-00-0
		Benzyl butyl phthalate	85-68-7
		Bis(2-ethylhexyl) phthalate	117-81-7
		Di-n-butyl phthalate	84-74-2
		Di-n-octyl phthalate (NOTE E)	117-84-0
		4-Bromophenyl phenyl ether	101-55-3
		4-Chlorophenyl phenyl ether	7005-72-3
		Bis(2-chloroisopropyl)ether	108-60-1

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s [1]
19	Extractables, Base Neutral (continued)	Bis(2-chloroethyl)ether	111-44-4
		Diphenyl ether (NOTE F)	10-184-8
		2,4-Dinitrotoluene	121-14-2
		2,6-Dinitrotoluene	606-20-2
		Bis(2-chloroethoxy)methane	111-91-1
		Diphenylamine (NOTE 5)	122-39-4
		N-Nitrosodiphenylamine (NOTE 5)	86-30-6
		N-Nitrosodi-n-propylamine	621-64-7
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol	4901-51-3
		2,3,4,6-Tetrachlorophenol	58-90-2
		2,3,5,6-Tetrachlorophenol	935-95-5
		2,3,4-Trichlorophenol	15950-66-0
		2,3,5-Trichlorophenol	933-78-8
		2,4,5-Trichlorophenol	95-95-4
		2,4,6-Trichlorophenol	88-06-2
		2,4-Dimethyl phenol	105-67-9
		2,4-Dinitrophenol	51-28-5
		2,4-Dichlorophenol	120-83-2
		2,6-Dichlorophenol	87-65-0
		4,6-Dinitro-o-cresol	534-52-1
		2-Chlorophenol	95-57-8
		4-Chloro-3-methylphenol	59-50-7
		4-Nitrophenol	100-02-7
		m-Cresol	108-39-4
		o-Cresol	95-48-7
		p-Cresol	106-44-5
		Pentachlorophenol	87-86-5
		Phenol	108-95-2

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
#	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s '
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene	634-66-2
		1,2,3,5-Tetrachlorobenzene	634-90-2
		1,2,4,5-Tetrachlorobenzene	95-94-3
		1,2,3-Trichlorobenzene	87-61-6
		1,2,4-Trichlorobenzene	120-82-1
		2,4,5-Trichlorotoluene	6639-30-1
		Hexachlorobenzene	118-74-1
		Hexachlorobutadiene	87-68-3
		Hexachlorocyclopentadiene	77-47-4
		Hexachloroethane	67-72-1
		Octachlorostyrene	29082-74-4
		Pentachlorobenzene	608-93-5
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
		Octachlorodibenzo-p-dioxin	326-88-7
		Octachlorodibenzofuran	Unavailable
		Total heptachlorinated dibenzo-p-dioxins	Unavailable
		Total heptachlorinated dibenzofurans	Unavailable
		Total hexachlorinated dibenzo-p-dioxins	34465-46-8
		Total hexachlorinated dibenzofurans	Unavailable
		Total pentachlorinated dibenzo-p-dioxins	Unavailable
		Total pentachlorinated dibenzofurans	Unavailable
		Total tetrachlorinated dibenzo-p-dioxins	Unavailable
		Total tetrachlorinated dibenzofurans	Unavailable
25	Solvent Extractables	Oil and grease	
26a	Fatty Acids	Monitoring protocols currently unavailable	
26b	Resin Acids	This group does not apply to the Organic Chemical Manufacturing Sector	

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
#	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s [1]
27	PCBs (Total)	PCBs (Total)	Unavailable

[1] CAS #s = Chemical Abstract Service Registry Numbers
[*] 4AAP = 4-amino antipyrine method

NOTE 1: Total organic carbon is to be analyzed only if the total suspended solids concentration is greater than 15 mg/L.
NOTE 2: Chromium (Hexavalent) is to be analyzed only if the total chromium concentration is greater than 1.0 mg/L.
NOTE 3: Total alkyl lead is to be analyzed only if the total lead concentration is greater than 1.0 mg/L.
NOTE 4: m-Xylene and p-xylene often co-elute in the analysis. A single combined result may be reported.
NOTE 5: Diphenylamine & N-Nitrosodiphenylamine often co-elute in the GC/MS analysis. A single combined result may be reported as Diphenylamine

NOTE A: Follow the Sampling & Analytical Principles outlined for Analytical Test Group 9 in Schedule 2 and in Part A of Schedule 3 in the General Effluent Monitoring Regulation with an Analytical Method Detection Limit of 0.05 mg/L.
NOTE B: Follow the Sampling & Analytical Principles outlined for Analytical Test Group 16 in Schedule 2 and in Part B of Schedule 3 in the General Effluent Monitoring Regulation with an Analytical Method Detection Limit of 0.8 µg/L.
NOTE C: Follow the Sampling & Analytical Principles outlined for Analytical Test Group 17 in Schedule 2 and in Part B of Schedule 3 in the General Effluent Monitoring Regulation with an Analytical Method Detection Limit of 0.6 µg/L.
NOTE D: Follow the Sampling & Analytical Principles outlined for Analytical Test Group 19 in Schedule 2 and in Part B of Schedule 3 in the General Effluent Monitoring Regulation with an Analytical Method Detection Limit of 0.6 µg/L.
NOTE E: Follow the Sampling & Analytical Principles outlined for Analytical Test Group 19 in Schedule 2 and in Part B of Schedule 3 in the General Effluent Monitoring Regulation with an Analytical Method Detection Limit of 2.0 µg/L.
NOTE F: Follow the Sampling & Analytical Principles outlined for Analytical Test Group 19 in Schedule 2 and in Part B of Schedule 3 in the General Effluent Monitoring Regulation with an Analytical Method Detection Limit of 0.4 µg/L.

LEGEND FOR SCHEDULES A TO S

NOTE 1: Total organic carbon is to be analyzed only if the total suspended solids concentration is greater than 15 milligrams/litre.

NOTE 2: Chromium (Hexavalent) is to be analyzed only if the total chromium concentration is greater than 1.0 milligram/litre.

NOTE 3: Total alkyl lead is to be analyzed only if the total lead concentration is greater than 1.0 milligram/litre.

NOTE 4: m-Xylene and p-Xylene often co-elute in the analysis. A single combined result may be reported.

NOTE 5: Diphenylamine and N-Nitrosodiphenylamine often co-elute in the Gas Chromatography/Mass Spectrometry (GC/MS) analysis. A single combined result may be reported as Diphenylamine.

ATG - Analytical Test Group

D - Daily

TW - Thrice weekly

W - Weekly

M - Monthly

4AAP* - 4-amino antipyrine method

PR - process effluent

CO - combined effluent

BA - batch discharge effluent

OT - once-through cooling water

ST - storm water

WA - waste disposal site effluent

EM - emergency overflow effluent

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE A - B. F. GOODRICH CANADA INC. (THOROLD)

		EFFLUENT STREAM:	PR 0100				WA 0400
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	during discharge
	ANALYTICAL TEST GROUP	**PARAMETERS TO BE ANALYZED**					
9	Total metals (continued)	Lead				●●●	●●●
		Molybdenum				●●●	●●●
		Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●	●●●
15	Sulphide	Sulphide				●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●	●●●
		1,1,2-Trichloroethane				●●●	●●●
		1,1-Dichloroethane				●●●	●●●
		1,1-Dichloroethylene				●●●	●●●
		1,2-Dichlorobenzene				●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●	●●●
		1,2-Dichloropropane				●●●	●●●
		1,3-Dichlorobenzene				●●●	●●●
		1,4-Dichlorobenzene				●●●	●●●
		Bromodichloromethane				●●●	●●●
		Bromoform				●●●	●●●
		Bromomethane				●●●	●●●
		Carbon tetrachloride				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE A - B. F. GOODRICH CANADA INC. (THOROLD)

		EFFLUENT STREAM:	PR 0100				WA 0400
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED					
2	Total cyanide	Total cyanide			●●●		●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●			●●●
		Total Kjeldahl nitrogen		●●●			●●●
4b		Nitrate + Nitrite		●●●			●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus		●●●			●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)	●●●				●●●
9	Total metals	Aluminum				●●●	●●●
		Beryllium				●●●	●●●
		Boron				●●●	●●●
		Cadmium				●●●	●●●
		Chromium				●●●	●●●
		Cobalt				●●●	●●●
		Copper				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE A - B. F. GOODRICH CANADA INC. (THOROLD)

		EFFLUENT STREAM:	PR 0100				WA 0400
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	during discharge
	ANALYTICAL TEST GROUP	**PARAMETERS TO BE ANALYZED**					
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●	●●●
		Chloroform				●●●	●●●
		Chloromethane				●●●	●●●
		Cis-1,3-Dichloropropylene				●●●	●●●
		Dibromochloromethane				●●●	●●●
		Ethylene dibromide				●●●	●●●
		Methylene chloride				●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●	●●●
		Trans-1,2-Dichloroethylene				●●●	●●●
		Trans-1,3-Dichloropropylene				●●●	●●●
		Trichloroethylene				●●●	●●●
		Trichlorofluoromethane				●●●	●●●
		Vinyl chloride (Chloroethylene)		●●●			●●●
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE B - BTL INDUSTRIES INC. (BELLEVILLE)

		EFFLUENT STREAM:	CO 0100				CO 0200			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium			●●●				●●●	
		Total Kjeldahl nitrogen			●●●				●●●	
4b		Nitrate + Nitrite								
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)								
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane								●●●
		1,1,2-Trichloroethane								●●●
		1,1-Dichloroethane								●●●
		1,1-Dichloroethylene								●●●
		1,2-Dichlorobenzene								●●●
		1,2-Dichloroethane (Ethylene dichloride)								●●●
		1,2-Dichloropropane								●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE B - BTL INDUSTRIES INC. (BELLEVILLE)

		EFFLUENT STREAM:	CO 0100				CO 0200			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
16	Volatiles, Halogenated (continued)	1,3-Dichlorobenzene								●●●
		1,4-Dichlorobenzene								●●●
		Bromodichloromethane								●●●
		Bromoform								●●●
		Bromomethane								●●●
		Carbon tetrachloride								●●●
		Chlorobenzene								●●●
		Chloroform								●●●
		Chloromethane								●●●
		Cis-1,3-Dichloropropylene								●●●
		Dibromochloromethane								●●●
		Ethylene dibromide								●●●
		Methylene chloride								●●●
		Tetrachloroethylene (Perchloroethylene)								●●●
		Trans-1,2-Dichloroethylene								●●●
		Trans-1,3-Dichloropropylene								●●●
		Trichloroethylene								●●●
		Trichlorofluoromethane								●●●
		Vinyl chloride (Chloroethylene)								●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●
		Ethylbenzene				●●●				●●●
		Styrene				●●●				●●●
		Toluene		●●●						●●●
		o-Xylene				●●●				●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE B - BTL INDUSTRIES INC. (BELLEVILLE)

		EFFLUENT STREAM:	CO 0100				CO 0200			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●
		2,3,4,6-Tetrachlorophenol				●●●				●●●
		2,3,5,6-Tetrachlorophenol				●●●				●●●
		2,3,4-Trichlorophenol				●●●				●●●
		2,3,5-Trichlorophenol				●●●				●●●
		2,4,5-Trichlorophenol				●●●				●●●
		2,4,6-Trichlorophenol				●●●				●●●
		2,4-Dimethyl phenol				●●●				●●●
		2,4-Dinitrophenol				●●●				●●●
		2,4-Dichlorophenol				●●●				●●●
		2,6-Dichlorophenol				●●●				●●●
		4,6-Dinitro-o-cresol				●●●				●●●
		2-Chlorophenol				●●●				●●●
		4-Chloro-3-methylphenol				●●●				●●●
		4-Nitrophenol				●●●				●●●
		m-Cresol				●●●				●●●
		o-Cresol				●●●				●●●
		p-Cresol				●●●				●●●
		Pentachlorophenol				●●●				●●●
		Phenol				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE C - CANADIANOXY CHEMICALS LTD. (FORT ERIE)

		EFFLUENT STREAM:	CO 0100				ST 0200
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●			●●●
		Total Kjeldahl nitrogen		●●●			●●●
4b		Nitrate + Nitrite					
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)					
9	Total metals	Aluminum				●●●	●●●
		Beryllium				●●●	●●●
		Boron				●●●	●●●
		Cadmium				●●●	●●●
		Chromium				●●●	●●●
		Cobalt				●●●	●●●
		Copper				●●●	●●●
		Lead				●●●	●●●
		Molybdenum				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE C - CANADIANOXY CHEMICALS LTD. (FORT ERIE)

		EFFLUENT STREAM:	CO 0100				ST 0200
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED					
9	Total metals (continued)	Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●			●●●
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●	
		2,3,4,6-Tetrachlorophenol				●●●	
		2,3,5,6-Tetrachlorophenol				●●●	
		2,3,4-Trichlorophenol				●●●	
		2,3,5-Trichlorophenol				●●●	
		2,4,5-Trichlorophenol				●●●	
		2,4,6-Trichlorophenol				●●●	
		2,4-Dimethyl phenol				●●●	
		2,4-Dinitrophenol				●●●	
		2,4-Dichlorophenol				●●●	
		2,6-Dichlorophenol				●●●	
		4,6-Dinitro-o-cresol				●●●	
		2-Chlorophenol				●●●	
		4-Chloro-3-methylphenol				●●●	
		4-Nitrophenol				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE C - CANADIANOXY CHEMICALS LTD. (FORT ERIE)

		EFFLUENT STREAM:	CO 0100				ST 0200
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
20	Extractables, Acid (Phenolics) (continued)	m-Cresol				●●●	
		o-Cresol				●●●	
		p-Cresol				●●●	
		Pentachlorophenol				●●●	
		Phenol				●●●	
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D – CELANESE CANADA INC. (MILLHAVEN)

		EFFLUENT STREAM:	PR 0400				CO 0100				CO 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium		●●●						●●●								
		Total Kjeldahl nitrogen		●●●						●●●								
4b		Nitrate + Nitrite		●●●						●●●								
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●			●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus		●●●					●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)	●●●															
9	Total metals	Aluminum				●●●				●●●				●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper			●●●					●●●		●●●						●●●
		Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D - CELANESE CANADA INC. (MILLHAVEN)

		EFFLUENT STREAM:	PR 0400				CO 0100				CO 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc			●●●					●●●				●●●				●●●
10	Hydrides	Antimony				●●●				●●●				●●●				●●●
		Arsenic				●●●				●●●				●●●				●●●
		Selenium				●●●				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●					●●●				●●●				●●●	
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D - CELANESE CANADA INC. (MILLHAVEN)

		EFFLUENT STREAM:	ST 0700	EM 0500
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		FREQUENCY OF SAMPLING:	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium		
		Total Kjeldahl nitrogen		
4b		Nitrate + Nitrite		
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●	●●●
6	Total phosphorus	Total phosphorus	●●●	●●●
7	Specific conductance	Specific conductance	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●	●●●
		Volatile suspended solids (VSS)		
9	Total metals	Aluminum	●●●	●●●
		Beryllium	●●●	●●●
		Boron	●●●	●●●
		Cadmium	●●●	●●●
		Chromium	●●●	●●●
		Cobalt	●●●	●●●
		Copper	●●●	●●●
		Lead	●●●	●●●
		Molybdenum	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D - CELANESE CANADA INC. (MILLHAVEN)

		EFFLUENT STREAM:	ST 0700	EM 0500
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		FREQUENCY OF SAMPLING:	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
9	Total metals (continued)	Nickel	●●●	●●●
		Silver	●●●	●●●
		Thallium	●●●	●●●
		Vanadium	●●●	●●●
		Zinc	●●●	●●●
10	Hydrides	Antimony	●●●	●●●
		Arsenic	●●●	●●●
		Selenium	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●	●●●
25	Solvent Extractables	Oil and grease	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CORNWALL CHEMICALS LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0100			
		TOXICITY TESTS REQUIRED:	Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M
	ANALYTICAL TEST GROUP	**PARAMETERS TO BE ANALYZED**				
3	Hydrogen ion (pH)	Hydrogen Ion (pH)	●●●			
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●		
6	Total phosphorus	Total phosphorus			●●●	
7	Specific conductance	Specific conductance	●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●		
		Volatile suspended solids (VSS)				
9	Total metals	Aluminum				●●●
		Beryllium				●●●
		Boron				●●●
		Cadmium				●●●
		Chromium				●●●
		Cobalt				●●●
		Copper				●●●
		Lead				●●●
		Molybdenum				●●●
		Nickel				●●●
		Silver				●●●
		Thallium				●●●
		Vanadium				●●●
		Zinc		●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CORNWALL CHEMICALS LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0100			
		TOXICITY TESTS REQUIRED:	Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
10	Hydrides	Antimony				●●●
		Arsenic				●●●
		Selenium				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●
12	Mercury	Mercury		●●●		
15	Sulphide	Sulphide		●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●
		1,1,2-Trichloroethane				●●●
		1,1-Dichloroethane				●●●
		1,1-Dichloroethylene				●●●
		1,2-Dichlorobenzene				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●
		1,2-Dichloropropane				●●●
		1,3-Dichlorobenzene		●●●		
		1,4-Dichlorobenzene				●●●
		Bromodichloromethane				●●●
		Bromoform				●●●
		Bromomethane				●●●
		Carbon tetrachloride		●●●		
		Chlorobenzene				●●●
		Chloroform		●●●		
		Chloromethane				●●●
		Cis-1,3-Dichloropropylene				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CORNWALL CHEMICALS LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0100			
		TOXICITY TESTS REQUIRED:	Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
16	Volatiles, Halogenated (continued)	Dibromochloromethane				●●●
		Ethylene dibromide				●●●
		Methylene chloride		●●●		
		Tetrachloroethylene (Perchloroethylene)		●●●		
		Trans-1,2-Dichloroethylene				●●●
		Trans-1,3-Dichloropropylene				●●●
		Trichloroethylene		●●●		
		Trichlorofluoromethane				●●●
		Vinyl chloride (Chloroethylene)				●●●
17	Volatiles, Non-Halogenated	Benzene		●●●		
		Ethylbenzene				●●●
		Styrene				●●●
		Toluene		●●●		
		o-Xylene		●●●		
		m-Xylene and p-Xylene (NOTE 4)		●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CORNWALL CHEMICALS LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0100			
		TOXICITY TESTS REQUIRED:	Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●
		1,2,3,5-Tetrachlorobenzene				●●●
		1,2,4,5-Tetrachlorobenzene				●●●
		1,2,3-Trichlorobenzene				●●●
		1,2,4-Trichlorobenzene				●●●
		2,4,5-Trichlorotoluene				●●●
		Hexachlorobenzene				●●●
		Hexachlorobutadiene				●●●
		Hexachlorocyclopentadiene				●●●
		Hexachloroethane				●●●
		Octachlorostyrene				●●●
		Pentachlorobenzene				●●●
25	Solvent Extractables	Oil and grease			●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium								●●●								
		Total Kjeldahl nitrogen								●●●								
4b		Nitrate + Nitrite			●●●				●●●									
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)			●●●				●●●				●●●				●●●	
9	Total metals	Aluminum		●●●				●●●						●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium		●●●						●●●			●●●					●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●		●●●						●●●				●●●
		Lead		●●●						●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc		●●●				●●●				●●●				●●●		
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)		●●●						●●●			●●●					●●●
12	Mercury	Mercury		●●●				●●●						●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●					●●●				●●●					
15	Sulphide	Sulphide		●●●				●●●				●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●								●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●
		Bromodichloromethane				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●
		Carbon tetrachloride				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform		●●●				●●●						●●●				●●●
		Chloromethane				●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride				●●●				●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●				●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●				
		Ethylbenzene				●●●				●●●				●●●				
		Styrene				●●●				●●●				●●●				
		Toluene				●●●			●●●		●●●							
		o-Xylene				●●●				●●●				●●●				
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●				●●●				
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●				
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●				
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●				
		2,3,4-Trichlorophenol				●●●				●●●				●●●				
		2,3,5-Trichlorophenol				●●●				●●●				●●●				
		2,4,5-Trichlorophenol				●●●				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol				●●●				●●●				●●●				
		2,4-Dimethyl phenol				●●●				●●●				●●●				
		2,4-Dinitrophenol				●●●				●●●				●●●				
		2,4-Dichlorophenol				●●●				●●●				●●●				
		2,6-Dichlorophenol				●●●				●●●				●●●				
		4,6-Dinitro-o-cresol				●●●				●●●				●●●				
		2-Chlorophenol				●●●				●●●				●●●				
		4-Chloro-3-methylphenol				●●●				●●●				●●●				
		4-Nitrophenol				●●●				●●●				●●●				
		m-Cresol				●●●				●●●				●●●				
		o-Cresol				●●●				●●●				●●●				
		p-Cresol				●●●				●●●				●●●				
		Pentachlorophenol				●●●		●●●						●●●				
		Phenol				●●●				●●●				●●●				
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium								
		Total Kjeldahl nitrogen								
4b		Nitrate + Nitrite								
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)			●●●				●●●	
9	Total metals	Aluminum				●●●				●●●
		Beryllium				●●●				●●●
		Boron				●●●				●●●
		Cadmium				●●●				●●●
		Chromium				●●●				●●●
		Cobalt				●●●				●●●
		Copper				●●●				●●●
		Lead				●●●				●●●
		Molybdenum				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
9	Total metals (continued)	Nickel				●●●				●●●
		Silver				●●●				●●●
		Thallium				●●●				●●●
		Vanadium				●●●				●●●
		Zinc		●●●				●●●		
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●
12	Mercury	Mercury				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*								
15	Sulphide	Sulphide		●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane								●●●
		1,1,2-Trichloroethane								●●●
		1,1-Dichloroethane								●●●
		1,1-Dichloroethylene								●●●
		1,2-Dichlorobenzene								●●●
		1,2-Dichloroethane (Ethylene dichloride)								●●●
		1,2-Dichloropropane								●●●
		1,3-Dichlorobenzene								●●●
		1,4-Dichlorobenzene								●●●
		Bromodichloromethane								●●●
		Bromoform								●●●
		Bromomethane								●●●
		Carbon tetrachloride								●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
16	Volatiles, Halogenated (continued)	Chlorobenzene								●●●
		Chloroform								●●●
		Chloromethane								●●●
		Cis-1,3-Dichloropropylene								●●●
		Dibromochloromethane								●●●
		Ethylene dibromide								●●●
		Methylene chloride								●●●
		Tetrachloroethylene (Perchloroethylene)								●●●
		Trans-1,2-Dichloroethylene								●●●
		Trans-1,3-Dichloropropylene								●●●
		Trichloroethylene								●●●
		Trichlorofluoromethane								●●●
		Vinyl chloride (Chloroethylene)								●●●
17	Volatiles, Non-Halogenated	Benzene								
		Ethylbenzene								
		Styrene								
		Toluene								
		o-Xylene								
		m-Xylene and p-Xylene (NOTE 4)								
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol								
		2,3,4,6-Tetrachlorophenol								
		2,3,5,6-Tetrachlorophenol								
		2,3,4-Trichlorophenol								
		2,3,5-Trichlorophenol								
		2,4,5-Trichlorophenol								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		EFFLUENT STREAM:	CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol								
		2,4-Dimethyl phenol								
		2,4-Dinitrophenol								
		2,4-Dichlorophenol								
		2,6-Dichlorophenol								
		4,6-Dinitro-o-cresol								
		2-Chlorophenol								
		4-Chloro-3-methylphenol								
		4-Nitrophenol								
		m-Cresol								
		o-Cresol								
		p-Cresol								
		Pentachlorophenol								
		Phenol								
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CANADA) LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0200				PR 1000				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED												
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium				●●●								
		Total Kjeldahl nitrogen				●●●								
4b		Nitrate + Nitrite		●●●					●●●					
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●					●●●			●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus				●●●				●●●			●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●		
		Volatile suspended solids (VSS)			●●●				●●●				●●●	
9	Total metals	Aluminum				●●●				●●●		●●●		
		Beryllium				●●●				●●●				●●●
		Boron				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●
		Copper				●●●				●●●		●●●		
		Lead				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CANADA) LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0200				PR 1000				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED												
9	Total metals (continued)	Nickel				●●●				●●●				●●●
		Silver				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●
12	Mercury	Mercury			●●●				●●●					●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●					●●●
15	Sulphide	Sulphide			●●●				●●●					●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				
		1,1,2-Trichloroethane				●●●				●●●				
		1,1-Dichloroethane				●●●				●●●				
		1,1-Dichloroethylene				●●●				●●●				
		1,2-Dichlorobenzene				●●●				●●●				
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				
		1,2-Dichloropropane				●●●				●●●				
		1,3-Dichlorobenzene				●●●				●●●				
		1,4-Dichlorobenzene				●●●				●●●				
		Bromodichloromethane				●●●				●●●				
		Bromoform				●●●				●●●				
		Bromomethane				●●●				●●●				
		Carbon tetrachloride				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CANADA) LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0200				PR 1000				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED												
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				
		Chloroform				●●●				●●●				
		Chloromethane				●●●				●●●				
		Cis-1,3-Dichloropropylene				●●●				●●●				
		Dibromochloromethane				●●●				●●●				
		Ethylene dibromide				●●●				●●●				
		Methylene chloride				●●●				●●●				
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				
		Trans-1,2-Dichloroethylene				●●●				●●●				
		Trans-1,3-Dichloropropylene				●●●				●●●				
		Trichloroethylene				●●●				●●●				
		Trichlorofluoromethane				●●●				●●●				
		Vinyl chloride (Chloroethylene)				●●●				●●●				
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●
		Ethylbenzene				●●●				●●●				●●●
		Styrene				●●●				●●●				●●●
		Toluene		●●●				●●●				●●●		
		o-Xylene				●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●				●●●
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				
		2,3,4,6-Tetrachlorophenol				●●●				●●●				
		2,3,5,6-Tetrachlorophenol				●●●				●●●				
		2,3,4-Trichlorophenol				●●●				●●●				
		2,3,5-Trichlorophenol				●●●				●●●				
		2,4,5-Trichlorophenol				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CANADA) LIMITED (CORNWALL)

		EFFLUENT STREAM:	PR 0200				PR 1000				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED												
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol				●●●				●●●				
		2,4-Dimethyl phenol				●●●				●●●				
		2,4-Dinitrophenol				●●●				●●●				
		2,4-Dichlorophenol				●●●				●●●				
		2,6-Dichlorophenol				●●●				●●●				
		4,6-Dinitro-o-cresol				●●●				●●●				
		2-Chlorophenol				●●●				●●●				
		4-Chloro-3-methylphenol				●●●				●●●				
		4-Nitrophenol				●●●				●●●				
		m-Cresol				●●●				●●●				
		o-Cresol				●●●				●●●				
		p-Cresol				●●●				●●●				
		Pentachlorophenol				●●●				●●●				
		Phenol				●●●				●●●				
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H - DOMTAR INC. (LONGFORD MILLS)

		EFFLUENT STREAM:	PR 0200				CO 0100				EM 0400
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**									
2	Total cyanide	Total cyanide				●●●				●●●	●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●						●●●	●●●
		Total Kjeldahl nitrogen		●●●						●●●	●●●
4b		Nitrate + Nitrite		●●●						●●●	●●●
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●			●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●			●●●
6	Total phosphorus	Total phosphorus		●●●					●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●			●●●
		Volatile suspended solids (VSS)	●●●								
9	Total metals	Aluminum		●●●						●●●	●●●
		Beryllium				●●●				●●●	●●●
		Boron				●●●				●●●	●●●
		Cadmium				●●●				●●●	●●●
		Chromium				●●●				●●●	●●●
		Cobalt				●●●				●●●	●●●
		Copper		●●●						●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H - DOMTAR INC. (LONGFORD MILLS)

		EFFLUENT STREAM:	PR 0200				CO 0100				EM 0400
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED									
9	Total metals (continued)	Lead				●●●				●●●	●●●
		Molybdenum				●●●				●●●	●●●
		Nickel				●●●				●●●	●●●
		Silver				●●●				●●●	●●●
		Thallium				●●●				●●●	●●●
		Vanadium				●●●				●●●	●●●
		Zinc		●●●						●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●	●●●
12	Mercury	Mercury			●●●					●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●						●●●	●●●
15	Sulphide	Sulphide				●●●				●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●	●●●
		1,1,2-Trichloroethane				●●●				●●●	●●●
		1,1-Dichloroethane				●●●				●●●	●●●
		1,1-Dichloroethylene				●●●				●●●	●●●
		1,2-Dichlorobenzene				●●●				●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●	●●●
		1,2-Dichloropropane				●●●				●●●	●●●
		1,3-Dichlorobenzene				●●●				●●●	●●●
		1,4-Dichlorobenzene				●●●				●●●	●●●
		Bromodichloromethane				●●●				●●●	●●●
		Bromoform				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H - DOMTAR INC. (LONGFORD MILLS)

		EFFLUENT STREAM:	PR 0200				CO 0100				EM 0400
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED									
16	Volatiles, Halogenated (continued)	Bromomethane				●●●				●●●	●●●
		Carbon tetrachloride		●●●						●●●	●●●
		Chlorobenzene				●●●				●●●	●●●
		Chloroform		●●●						●●●	●●●
		Chloromethane				●●●				●●●	●●●
		Cis-1,3-Dichloropropylene				●●●				●●●	●●●
		Dibromochloromethane				●●●				●●●	●●●
		Ethylene dibromide				●●●				●●●	●●●
		Methylene chloride				●●●				●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●	●●●
		Trans-1,2-Dichloroethylene				●●●				●●●	●●●
		Trans-1,3-Dichloropropylene				●●●				●●●	●●●
		Trichloroethylene				●●●				●●●	●●●
		Trichlorofluoromethane				●●●				●●●	●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●	●●●
25	Solvent Extractables	Oil and grease		●●●					●●●		●●●
27	PCBs	PCBs (Total)				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
2	Total cyanide	Total cyanide										●●●						
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium							●●●			●●●						●●●
		Total Kjeldahl nitrogen							●●●			●●●						●●●
4b		Nitrate + Nitrite			●●●				●●●					●●●				●●●
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●				●●●				●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus				●●●				●●●				●●●				●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum				●●●		●●●						●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●		●●●				●●●				●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●
		Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●		●●●						●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
12	Mercury	Mercury				●●●			●●●			●●●						●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●				●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●								●●●				
		1,1,2-Trichloroethane				●●●								●●●				
		1,1-Dichloroethane				●●●								●●●				
		1,1-Dichloroethylene				●●●								●●●				
		1,2-Dichlorobenzene				●●●								●●●				
		1,2-Dichloroethane (Ethylene dichloride)				●●●								●●●				
		1,2-Dichloropropane				●●●								●●●				
		1,3-Dichlorobenzene				●●●								●●●				
		1,4-Dichlorobenzene				●●●								●●●				
		Bromodichloromethane				●●●								●●●				
		Bromoform				●●●								●●●				
		Bromomethane				●●●								●●●				
		Carbon tetrachloride				●●●						●●●						

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●								●●●				
		Chloroform		●●●								●●●						
		Chloromethane				●●●								●●●				
		Cis-1,3-Dichloropropylene				●●●								●●●				
		Dibromochloromethane				●●●								●●●				
		Ethylene dibromide				●●●								●●●				
		Methylene chloride				●●●								●●●				
		Tetrachloroethylene (Perchloroethylene)				●●●								●●●				
		Trans-1,2-Dichloroethylene				●●●								●●●				
		Trans-1,3-Dichloropropylene				●●●								●●●				
		Trichloroethylene				●●●								●●●				
		Trichlorofluoromethane				●●●								●●●				
		Vinyl chloride (Chloroethylene)				●●●								●●●				
17	Volatiles, Non-Halogenated	Benzene		●●●						●●●				●●●				
		Ethylbenzene				●●●				●●●				●●●				
		Styrene				●●●		●●●				●●●						
		Toluene				●●●		●●●						●●●				
		o-Xylene				●●●		●●●						●●●				
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●				●●●				
18	Volatiles, Water Soluble	Acrolein												●●●				
		Acrylonitrile												●●●				
19	Extractables, Base Neutral	Acenaphthene				●●●				●●●								
		5-nitro Acenaphthene				●●●				●●●								
		Acenaphthylene				●●●				●●●								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Anthracene				●●●				●●●								
		Benz(a)anthracene				●●●				●●●								
		Benzo(a)pyrene				●●●				●●●								
		Benzo(b)fluoranthene				●●●				●●●								
		Benzo(g,h,i)perylene				●●●				●●●								
		Benzo(k)fluoranthene				●●●				●●●								
		Biphenyl				●●●				●●●								
		Camphene				●●●				●●●								
		1-Chloronaphthalene				●●●				●●●								
		2-Chloronaphthalene				●●●				●●●								
		Chrysene				●●●				●●●								
		Dibenz(a,h)anthracene				●●●				●●●								
		Fluoranthene				●●●				●●●								
		Fluorene				●●●				●●●								
		Indeno(1,2,3-cd)pyrene				●●●				●●●								
		Indole				●●●				●●●								
		1-Methylnaphthalene				●●●				●●●								
		2-Methylnaphthalene				●●●				●●●								
		Naphthalene				●●●				●●●								
		Perylene				●●●				●●●								
		Phenanthrene				●●●				●●●								
		Pyrene				●●●				●●●								
		Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																
		Di-n-octyl phthalate																
		4-Bromophenyl phenyl ether																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 5)																
		N-Nitrosodiphenylamine (NOTE 5)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,4-Trichlorophenol				●●●				●●●				●●●				●●●
		2,3,5-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4,5-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4,6-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4-Dimethyl phenol				●●●				●●●				●●●				●●●
		2,4-Dinitrophenol				●●●				●●●				●●●				●●●
		2,4-Dichlorophenol				●●●				●●●				●●●				●●●
		2,6-Dichlorophenol				●●●				●●●				●●●				●●●
		4,6-Dinitro-o-cresol				●●●				●●●				●●●				●●●
		2-Chlorophenol				●●●				●●●				●●●				●●●
		4-Chloro-3-methylphenol				●●●				●●●				●●●				●●●
		4-Nitrophenol				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	m-Cresol				●●●				●●●				●●●				●●●
		o-Cresol				●●●				●●●				●●●				●●●
		p-Cresol				●●●				●●●				●●●				●●●
		Pentachlorophenol				●●●				●●●				●●●				●●●
		Phenol				●●●				●●●				●●●				●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●								●●●				
		1,2,3,5-Tetrachlorobenzene				●●●								●●●				
		1,2,4,5-Tetrachlorobenzene				●●●								●●●				
		1,2,3-Trichlorobenzene				●●●								●●●				
		1,2,4-Trichlorobenzene				●●●								●●●				
		2,4,5-Trichlorotoluene				●●●								●●●				
		Hexachlorobenzene				●●●								●●●				
		Hexachlorobutadiene				●●●								●●●				
		Hexachlorocyclopentadiene				●●●								●●●				
		Hexachloroethane				●●●								●●●				
		Octachlorostyrene				●●●								●●●				
		Pentachlorobenzene				●●●								●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin				●●●												
		Octachlorodibenzo-p-dioxin				●●●												
		Octachlorodibenzofuran				●●●												
		Total heptachlorinated dibenzo-p-dioxins				●●●												
		Total heptachlorinated dibenzofurans				●●●												
		Total hexachlorinated dibenzo-p-dioxins				●●●												
		Total hexachlorinated dibenzofurans				●●●												
		Total pentachlorinated dibenzo-p-dioxins				●●●												
		Total pentachlorinated dibenzofurans				●●●												
		Total tetrachlorinated dibenzo-p-dioxins				●●●												
		Total tetrachlorinated dibenzofurans				●●●												
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1600				PR 1700				PR 1900				PR 2000			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
2	Total cyanide	Total cyanide											●●●					
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium								●●●		●●●						
		Total Kjeldahl nitrogen								●●●		●●●						
4b		Nitrate + Nitrite							●●●			●●●					●●●	
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●				●●●				●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus				●●●				●●●		●●●						●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)									●●●							
9	Total metals	Aluminum				●●●				●●●				●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●								●●●
		Cobalt				●●●				●●●		●●●						●●●
		Copper				●●●				●●●		●●●		●●●				●●●
																●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1600				PR 1700				PR 1900				PR 2000			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●
		Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●		●●●						●●●
12	Mercury	Mercury				●●●				●●●		●●●						●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●				●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●		●●●						●●●				
		1,1,2-Trichloroethane				●●●		●●●						●●●				
		1,1-Dichloroethane				●●●		●●●						●●●				
		1,1-Dichloroethylene				●●●		●●●						●●●				
		1,2-Dichlorobenzene				●●●				●●●				●●●				
		1,2-Dichloroethane (Ethylene dichloride)				●●●		●●●						●●●				
		1,2-Dichloropropane				●●●				●●●			●●●					
		1,3-Dichlorobenzene				●●●				●●●				●●●				
		1,4-Dichlorobenzene				●●●				●●●				●●●				
		Bromodichloromethane				●●●				●●●				●●●				
		Bromoform				●●●				●●●				●●●				
		Bromomethane				●●●				●●●				●●●				
		Carbon tetrachloride				●●●		●●●						●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1600				PR 1700				PR 1900				PR 2000			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				
		Chloroform				●●●		●●●						●●●				
		Chloromethane				●●●				●●●				●●●				
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				
		Dibromochloromethane				●●●				●●●				●●●				
		Ethylene dibromide				●●●				●●●				●●●				
		Methylene chloride				●●●		●●●						●●●				
		Tetrachloroethylene (Perchloroethylene)				●●●		●●●						●●●				
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				
		Trichloroethylene				●●●		●●●						●●●				
		Trichlorofluoromethane				●●●				●●●				●●●				
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				
17	Volatiles, Non-Halogenated	Benzene												●●●				
		Ethylbenzene												●●●				
		Styrene												●●●				
		Toluene												●●●				
		o-Xylene												●●●				
		m-Xylene and p-Xylene (NOTE 4)												●●●				
18	Volatiles, Water Soluble	Acrolein																
		Acrylonitrile																
19	Extractables, Base Neutral	Acenaphthene																
		5-nitro Acenaphthene																
		Acenaphthylene																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1600				PR 1700				PR 1900				PR 2000			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Anthracene																
		Benz(a)anthracene																
		Benzo(a)pyrene																
		Benzo(b)fluoranthene																
		Benzo(g,h,i)perylene																
		Benzo(k)fluoranthene																
		Biphenyl																
		Camphene																
		1-Chloronaphthalene																
		2-Chloronaphthalene																
		Chrysene																
		Dibenz(a,h)anthracene																
		Fluoranthene																
		Fluorene																
		Indeno(1,2,3-cd)pyrene																
		Indole																
		1-Methylnaphthalene																
		2-Methylnaphthalene																
		Naphthalene																
		Perylene																
		Phenanthrene																
		Pyrene																
		Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																
		Di-n-octyl phthalate																
		4-Bromophenyl phenyl ether																

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I – DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1600				PR 1700				PR 1900				PR 2000			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 5)																
		N-Nitrosodiphenylamine (NOTE 5)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol								●●●				●●●				●●●
		2,3,4,6-Tetrachlorophenol								●●●				●●●				●●●
		2,3,5,6-Tetrachlorophenol								●●●				●●●				●●●
		2,3,4-Trichlorophenol								●●●				●●●				●●●
		2,3,5-Trichlorophenol								●●●				●●●				●●●
		2,4,5-Trichlorophenol								●●●				●●●				●●●
		2,4,6-Trichlorophenol								●●●				●●●				●●●
		2,4-Dimethyl phenol								●●●				●●●				●●●
		2,4-Dinitrophenol								●●●				●●●				●●●
		2,4-Dichlorophenol								●●●				●●●				●●●
		2,6-Dichlorophenol								●●●				●●●				●●●
		4,6-Dinitro-o-cresol								●●●				●●●				●●●
		2-Chlorophenol								●●●				●●●				●●●
		4-Chloro-3-methylphenol								●●●				●●●				●●●
		4-Nitrophenol								●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 1600				PR 1700				PR 1900				PR 2000			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	m-Cresol								●●●				●●●				●●●
		o-Cresol								●●●				●●●				●●●
		p-Cresol								●●●				●●●				●●●
		Pentachlorophenol								●●●				●●●				●●●
		Phenol								●●●				●●●				●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●				
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●				
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●				
		1,2,3-Trichlorobenzene				●●●				●●●				●●●				
		1,2,4-Trichlorobenzene				●●●				●●●				●●●				
		2,4,5-Trichlorotoluene				●●●				●●●				●●●				
		Hexachlorobenzene				●●●				●●●				●●●				
		Hexachlorobutadiene				●●●				●●●				●●●				
		Hexachlorocyclopentadiene				●●●				●●●				●●●				
		Hexachloroethane				●●●				●●●				●●●				
		Octachlorostyrene				●●●				●●●				●●●				
		Pentachlorobenzene				●●●				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

			PR 1600				PR 1700				PR 1900				PR 2000			
		EFFLUENT STREAM:																
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin																
		Octachlorodibenzo-p-dioxin												●●●				
		Octachlorodibenzofuran												●●●				
		Total heptachlorinated dibenzo-p-dioxins												●●●				
		Total heptachlorinated dibenzofurans												●●●				
		Total hexachlorinated dibenzo-p-dioxins												●●●				
		Total hexachlorinated dibenzofurans												●●●				
		Total pentachlorinated dibenzo-p-dioxins												●●●				
		Total pentachlorinated dibenzofurans												●●●				
		Total tetrachlorinated dibenzo-p-dioxins												●●●				
		Total tetrachlorinated dibenzofurans												●●●				
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
2	Total cyanide	Total cyanide																
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium																
		Total Kjeldahl nitrogen																
4b		Nitrate + Nitrite												●●●				
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●			●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum				●●●												
		Beryllium				●●●												
		Boron				●●●												
		Cadmium				●●●												
		Chromium			●●●													
		Cobalt				●●●												
		Copper			●●●													

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●												
		Molybdenum				●●●												
		Nickel				●●●												
		Silver				●●●												
		Thallium				●●●												
		Vanadium				●●●												
		Zinc			●●●													
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)			●●●													
12	Mercury	Mercury			●●●				●●●			●●●					●●●	
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●					●●●				●●●				●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●		●●●						●●●				●●●
		1,1,2-Trichloroethane		●●●				●●●						●●●				●●●
		1,1-Dichloroethane		●●●				●●●						●●●				●●●
		1,1-Dichloroethylene				●●●		●●●						●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)		●●●				●●●						●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●		●●●		
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●
		Bromodichloromethane				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●
		Carbon tetrachloride		●●●				●●●				●●●				●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform				●●●				●●●				●●●				●●●
		Chloromethane				●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride				●●●		●●●						●●●				●●●
		Tetrachloroethylene (Perchloroethylene)		●●●				●●●				●●●						●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●		●●●						●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●		●●●						●●●				●●●
17	Volatiles, Non-Halogenated	Benzene														●●●		
		Ethylbenzene																●●●
		Styrene																●●●
		Toluene																●●●
		o-Xylene																●●●
		m-Xylene and p-Xylene (NOTE 4)																●●●
18	Volatiles, Water Soluble	Acrolein																
		Acrylonitrile																
19	Extractables, Base Neutral	Acenaphthene																
		5-nitro Acenaphthene																
		Acenaphthylene																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Anthracene																
		Benz(a)anthracene																
		Benzo(a)pyrene																
		Benzo(b)fluoranthene																
		Benzo(g,h,i)perylene																
		Benzo(k)fluoranthene																
		Biphenyl																
		Camphene																
		1-Chloronaphthalene																
		2-Chloronaphthalene																
		Chrysene																
		Dibenz(a,h)anthracene																
		Fluoranthene																
		Fluorene																
		Indeno(1,2,3-cd)pyrene																
		Indole																
		1-Methylnaphthalene																
		2-Methylnaphthalene																
		Naphthalene																
		Perylene																
		Phenanthrene																
		Pyrene																
		Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																
		Di-n-octyl phthalate																
		4-Bromophenyl phenyl ether																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 5)																
		N-Nitrosodiphenylamine (NOTE 5)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●												
		2,3,4,6-Tetrachlorophenol				●●●												
		2,3,5,6-Tetrachlorophenol				●●●												
		2,3,4-Trichlorophenol				●●●												
		2,3,5-Trichlorophenol				●●●												
		2,4,5-Trichlorophenol				●●●												
		2,4,6-Trichlorophenol				●●●												
		2,4-Dimethyl phenol				●●●												
		2,4-Dinitrophenol				●●●												
		2,4-Dichlorophenol				●●●												
		2,6-Dichlorophenol				●●●												
		4,6-Dinitro-o-cresol				●●●												
		2-Chlorophenol				●●●												
		4-Chloro-3-methylphenol				●●●												
		4-Nitrophenol				●●●												

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	m-Cresol				●●●												
		o-Cresol				●●●												
		p-Cresol				●●●												
		Pentachlorophenol				●●●												
		Phenol				●●●												
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,3-Trichlorobenzene				●●●				●●●				●●●				●●●
		1,2,4-Trichlorobenzene				●●●				●●●				●●●				●●●
		2,4,5-Trichlorotoluene				●●●				●●●				●●●				●●●
		Hexachlorobenzene				●●●				●●●				●●●				●●●
		Hexachlorobutadiene				●●●				●●●				●●●				●●●
		Hexachlorocyclopentadiene				●●●				●●●				●●●				●●●
		Hexachloroethane				●●●				●●●				●●●				●●●
		Octachlorostyrene				●●●				●●●				●●●				●●●
		Pentachlorobenzene				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	PR 2100				CO 0200				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin																
		Octachlorodibenzo-p-dioxin																
		Octachlorodibenzofuran																
		Total heptachlorinated dibenzo-p-dioxins																
		Total heptachlorinated dibenzofurans																
		Total hexachlorinated dibenzo-p-dioxins																
		Total hexachlorinated dibenzofurans																
		Total pentachlorinated dibenzo-p-dioxins																
		Total pentachlorinated dibenzofurans																
		Total tetrachlorinated dibenzo-p-dioxins																
		Total tetrachlorinated dibenzofurans																
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)				●●●								●●●				

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I – DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**											
2	Total cyanide	Total cyanide				●●●				●●●			
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium				●●●				●●●			
		Total Kjeldahl nitrogen				●●●				●●●			
4b		Nitrate + Nitrite				●●●				●●●		●●●	
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●				●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)											●●●
9	Total metals	Aluminum											●●●
		Beryllium											●●●
		Boron											●●●
		Cadmium											●●●
		Chromium											●●●
		Cobalt											●●●
		Copper											●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
9	Total metals (continued)	Lead											●●●
		Molybdenum											●●●
		Nickel											●●●
		Silver											●●●
		Thallium											●●●
		Vanadium											●●●
		Zinc											●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)											●●●
12	Mercury	Mercury			●●●				●●●			●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●		●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●	●●●	●●●	
		1,1,2-Trichloroethane				●●●				●●●	●●●	●●●	
		1,1-Dichloroethane				●●●				●●●	●●●	●●●	
		1,1-Dichloroethylene				●●●				●●●	●●●	●●●	
		1,2-Dichlorobenzene				●●●				●●●	●●●	●●●	
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●	●●●	●●●	
		1,2-Dichloropropane				●●●				●●●	●●●	●●●	
		1,3-Dichlorobenzene				●●●				●●●	●●●	●●●	
		1,4-Dichlorobenzene				●●●				●●●	●●●	●●●	
		Bromodichloromethane				●●●				●●●	●●●	●●●	
		Bromoform				●●●				●●●	●●●	●●●	
		Bromomethane				●●●				●●●	●●●	●●●	
		Carbon tetrachloride		●●●						●●●	●●●	●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●	●●●	●●●	
		Chloroform				●●●				●●●	●●●	●●●	
		Chloromethane				●●●				●●●	●●●	●●●	
		Cis-1,3-Dichloropropylene				●●●				●●●	●●●	●●●	
		Dibromochloromethane				●●●				●●●	●●●	●●●	
		Ethylene dibromide				●●●				●●●	●●●	●●●	
		Methylene chloride				●●●				●●●	●●●	●●●	
		Tetrachloroethylene (Perchloroethylene)		●●●				●●●			●●●	●●●	
		Trans-1,2-Dichloroethylene				●●●				●●●	●●●	●●●	
		Trans-1,3-Dichloropropylene				●●●				●●●	●●●	●●●	
		Trichloroethylene				●●●				●●●	●●●	●●●	
		Trichlorofluoromethane				●●●				●●●	●●●	●●●	
		Vinyl chloride (Chloroethylene)				●●●				●●●	●●●	●●●	
17	Volatiles, Non-Halogenated	Benzene		●●●				●●●				●●●	
		Ethylbenzene				●●●				●●●		●●●	
		Styrene		●●●						●●●		●●●	
		Toluene				●●●				●●●		●●●	
		o-Xylene				●●●				●●●		●●●	
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●		●●●	
18	Volatiles, Water Soluble	Acrolein											
		Acrylonitrile											
19	Extractables, Base Neutral	Acenaphthene											
		5-nitro Acenaphthene											
		Acenaphthylene											

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
19	Extractables, Base Neutral (continued)	Anthracene											
		Benz(a)anthracene											
		Benzo(a)pyrene											
		Benzo(b)fluoranthene											
		Benzo(g,h,i)perylene											
		Benzo(k)fluoranthene											
		Biphenyl											
		Camphene											
		1-Chloronaphthalene											
		2-Chloronaphthalene											
		Chrysene											
		Dibenz(a,h)anthracene											
		Fluoranthene											
		Fluorene											
		Indeno(1,2,3-cd)pyrene											
		Indole											
		1-Methylnaphthalene											
		2-Methylnaphthalene											
		Naphthalene											
		Perylene											
		Phenanthrene											
		Pyrene											
		Benzyl butyl phthalate											
		Bis(2-ethylhexyl) phthalate											
		Di-n-butyl phthalate											
		Di-n-octyl phthalate											
		4-Bromophenyl phenyl ether											

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
19	Extractables, Base Neutral (continued)	4-Chlorophenyl phenyl ether											
		Bis(2-chloroisopropyl)ether											
		Bis(2-chloroethyl)ether											
		Diphenyl ether											
		2,4-Dinitrotoluene											
		2,6-Dinitrotoluene											
		Bis(2-chloroethoxy)methane											
		Diphenylamine (NOTE 5)											
		N-Nitrosodiphenylamine (NOTE 5)											
		N-Nitrosodi-n-propylamine											
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●		●●●	
		2,3,4,6-Tetrachlorophenol				●●●				●●●		●●●	
		2,3,5,6-Tetrachlorophenol				●●●				●●●		●●●	
		2,3,4-Trichlorophenol				●●●				●●●		●●●	
		2,3,5-Trichlorophenol				●●●				●●●		●●●	
		2,4,5-Trichlorophenol				●●●				●●●		●●●	
		2,4,6-Trichlorophenol				●●●				●●●		●●●	
		2,4-Dimethyl phenol				●●●				●●●		●●●	
		2,4-Dinitrophenol				●●●				●●●		●●●	
		2,4-Dichlorophenol				●●●				●●●		●●●	
		2,6-Dichlorophenol				●●●				●●●		●●●	
		4,6-Dinitro-o-cresol				●●●				●●●		●●●	
		2-Chlorophenol				●●●				●●●		●●●	
		4-Chloro-3-methylphenol				●●●				●●●		●●●	
		4-Nitrophenol				●●●				●●●		●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
20	Extractables, Acid (Phenolics) (continued)	m-Cresol				●●●				●●●		●●●	
		o-Cresol				●●●				●●●		●●●	
		p-Cresol				●●●				●●●		●●●	
		Pentachlorophenol				●●●				●●●		●●●	
		Phenol				●●●				●●●		●●●	
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●	●●●		
		1,2,3,5-Tetrachlorobenzene				●●●				●●●	●●●		
		1,2,4,5-Tetrachlorobenzene				●●●				●●●	●●●		
		1,2,3-Trichlorobenzene				●●●				●●●	●●●		
		1,2,4-Trichlorobenzene				●●●				●●●	●●●		
		2,4,5-Trichlorotoluene				●●●				●●●	●●●		
		Hexachlorobenzene				●●●				●●●	●●●		
		Hexachlorobutadiene				●●●				●●●	●●●		
		Hexachlorocyclopentadiene				●●●				●●●	●●●		
		Hexachloroethane				●●●				●●●	●●●		
		Octachlorostyrene				●●●				●●●	●●●		
		Pentachlorobenzene				●●●				●●●	●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOW CHEMICAL CANADA INC. (SARNIA)

		EFFLUENT STREAM:	CO 0700				CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes	Yes	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin											
		Octachlorodibenzo-p-dioxin											
		Octachlorodibenzofuran											
		Total heptachlorinated dibenzo-p-dioxins											
		Total heptachlorinated dibenzofurans											
		Total hexachlorinated dibenzo-p-dioxins											
		Total hexachlorinated dibenzofurans											
		Total pentachlorinated dibenzo-p-dioxins											
		Total pentachlorinated dibenzofurans											
		Total tetrachlorinated dibenzo-p-dioxins											
		Total tetrachlorinated dibenzofurans											
25	Solvent Extractables	Oil and grease			●●●				●●●		●●●	●●●	●●●
27	PCBs	PCBs (Total)											

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DU PONT CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium		●●●						
		Total Kjeldahl nitrogen		●●●						
4b		Nitrate + Nitrite								
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●					●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●					●●●
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)								
9	Total metals	Aluminum				●●●				●●●
		Beryllium				●●●				●●●
		Boron				●●●				●●●
		Cadmium				●●●				●●●
		Chromium				●●●				●●●
		Cobalt				●●●				●●●
		Copper				●●●				●●●
		Lead				●●●				●●●
		Molybdenum				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DU PONT CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
9	Total metals (continued)	Nickel				●●●				●●●
		Silver				●●●				●●●
		Thallium				●●●				●●●
		Vanadium				●●●				●●●
		Zinc				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●	
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●
		Ethylbenzene				●●●				●●●
		Styrene				●●●				●●●
		Toluene				●●●				●●●
		o-Xylene				●●●				●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (KINGSTON)

		EFFLUENT STREAM:	PR 0600				PR 1000				CO 0700				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium																
		Total Kjeldahl nitrogen		●●●				●●●										
4b		Nitrate + Nitrite																
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●				●●●			●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum			●●●				●●●				●●●				●●●	
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●				●●●				●●●				●●●
		Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (KINGSTON)

		EFFLUENT STREAM:	PR 0600				PR 1000				CO 0700				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
12	Mercury	Mercury				●●●				●●●								
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●				●●●				●●●		
15	Sulphide	Sulphide				●●●				●●●				●●●				●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●
		Bromodichloromethane				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●
		Carbon tetrachloride				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (KINGSTON)

		EFFLUENT STREAM:	PR 0600				PR 1000				CO 0700				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform				●●●				●●●				●●●				●●●
		Chloromethane				●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride				●●●				●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●				●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●				●●●
		Ethylbenzene				●●●				●●●				●●●				●●●
		Styrene				●●●				●●●				●●●				●●●
		Toluene				●●●				●●●				●●●				●●●
		o-Xylene				●●●				●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●				●●●				●●●
18	Volatiles, Water Soluble	Acrolein				●●●				●●●				●●●				●●●
		Acrylonitrile				●●●				●●●				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (KINGSTON)

		EFFLUENT STREAM:	WA 0800
		TOXICITY TESTS REQUIRED:	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	
		FREQUENCY OF SAMPLING:	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED	
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●
4a	Nitrogen	Ammonia plus Ammonium	
		Total Kjeldahl nitrogen	
4b		Nitrate + Nitrite	
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●
6	Total phosphorus	Total phosphorus	●●●
7	Specific conductance	Specific conductance	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●
		Volatile suspended solids (VSS)	
9	Total met	Aluminum	●●●
		Beryllium	●●●
		Boron	●●●
		Cadmium	●●●
		Chromium	●●●
		Cobalt	●●●
		Copper	●●●
		Lead	●●●
		Molybdenum	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (KINGSTON)

		EFFLUENT STREAM:	WA 0800
		TOXICITY TESTS REQUIRED:	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None
		FREQUENCY OF SAMPLING:	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**	
9	Total metals (continued)	Nickel	●●●
		Silver	●●●
		Thallium	●●●
		Vanadium	●●●
		Zinc	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●
12	Mercury	Mercury	
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●
15	Sulphide	Sulphide	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	●●●
		1,1,2-Trichloroethane	●●●
		1,1-Dichloroethane	●●●
		1,1-Dichloroethylene	●●●
		1,2-Dichlorobenzene	●●●
		1,2-Dichloroethane (Ethylene dichloride)	●●●
		1,2-Dichloropropane	●●●
		1,3-Dichlorobenzene	●●●
		1,4-Dichlorobenzene	●●●
		Bromodichloromethane	●●●
		Bromoform	●●●
		Bromomethane	●●●
		Carbon tetrachloride	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (KINGSTON)

		EFFLUENT STREAM:	WA 0800
		TOXICITY TESTS REQUIRED:	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None
		FREQUENCY OF SAMPLING:	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**	
16	Volatiles, Halogenated (continued)	Chlorobenzene	●●●
		Chloroform	●●●
		Chloromethane	●●●
		Cis-1,3-Dichloropropylene	●●●
		Dibromochloromethane	●●●
		Ethylene dibromide	●●●
		Methylene chloride	●●●
		Tetrachloroethylene (Perchloroethylene)	●●●
		Trans-1,2-Dichloroethylene	●●●
		Trans-1,3-Dichloropropylene	●●●
		Trichloroethylene	●●●
		Trichlorofluoromethane	●●●
		Vinyl chloride (Chloroethylene)	●●●
17	Volatiles, Non-Halogenated	Benzene	●●●
		Ethylbenzene	●●●
		Styrene	●●●
		Toluene	●●●
		o-Xylene	●●●
		m-Xylene and p-Xylene (NOTE 4)	●●●
18	Volatiles, Water Soluble	Acrolein	●●●
		Acrylonitrile	●●●
25	Solvent Extractables	Oil and grease	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
2	Total cyanide	Total cyanide			●●●													●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium		●●●												●●●		
		Total Kjeldahl nitrogen		●●●								●●●				●●●		
4b		Nitrate + Nitrite		●●●												●●●		
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●				●●●				●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus		●●●						●●●			●●●					●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)	●●●															
9	Total metals	Aluminum				●●●								●●●				
		Beryllium				●●●								●●●				
		Boron				●●●								●●●				
		Cadmium				●●●								●●●				
		Chromium				●●●								●●●				
		Cobalt		●●●										●●●				
		Copper		●●●										●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●								●●●				
		Molybdenum				●●●								●●●				
		Nickel				●●●								●●●				
		Silver				●●●								●●●				
		Thallium				●●●								●●●				
		Vanadium				●●●								●●●				
		Zinc				●●●								●●●				
10	Hydrides	Antimony				●●●		●●●										
		Arsenic			●●●			●●●										
		Selenium				●●●				●●●								
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●								●●●				
12	Mercury	Mercury												●●●				
13	Total alkyl lead (NOTE 3)	Tetra-alkyl lead																
		Tri-alkyl lead																
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●													
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●		●●●										
		1,1,2-Trichloroethane				●●●				●●●								
		1,1-Dichloroethane				●●●				●●●								
		1,1-Dichloroethylene				●●●				●●●								
		1,2-Dichlorobenzene				●●●				●●●								
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	1,2-Dichloropropane				●●●				●●●								
		1,3-Dichlorobenzene				●●●				●●●								
		1,4-Dichlorobenzene				●●●				●●●								
		Bromodichloromethane				●●●				●●●								
		Bromoform				●●●				●●●								
		Bromomethane				●●●				●●●								
		Carbon tetrachloride				●●●	●●●											
		Chlorobenzene				●●●				●●●								
		Chloroform			●●●					●●●								
		Chloromethane				●●●				●●●								
		Cis-1,3-Dichloropropylene				●●●				●●●								
		Dibromochloromethane				●●●	●●●											
		Ethylene dibromide				●●●				●●●								
		Methylene chloride				●●●				●●●								
		Tetrachloroethylene (Perchloroethylene)				●●●	●●●											
		Trans-1,2-Dichloroethylene				●●●				●●●								
		Trans-1,3-Dichloropropylene				●●●				●●●								
		Trichloroethylene				●●●				●●●								
		Trichlorofluoromethane				●●●	●●●											
		Vinyl chloride (Chloroethylene)				●●●				●●●								
17	Volatiles, Non-Halogenated	Benzene				●●●												
		Ethylbenzene				●●●												
		Styrene				●●●												
		Toluene				●●●												
		o-Xylene				●●●												
		m-Xylene and p-Xylene (NOTE 4)				●●●												

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral	Acenaphthene				●●●												
		5-nitro Acenaphthene				●●●												
		Acenaphthylene				●●●												
		Anthracene				●●●												
		Benz(a)anthracene				●●●												
		Benzo(a)pyrene				●●●												
		Benzo(b)fluoranthene				●●●												
		Benzo(g,h,i)perylene				●●●												
		Benzo(k)fluoranthene				●●●												
		Biphenyl				●●●												
		Camphene				●●●												
		1-Chloronaphthalene				●●●												
		2-Chloronaphthalene				●●●												
		Chrysene				●●●												
		Dibenz(a,h)anthracene				●●●												
		Fluoranthene				●●●												
		Fluorene				●●●												
		Indeno(1,2,3-cd)pyrene				●●●												
		Indole				●●●												
		1-Methylnaphthalene				●●●												
		2-Methylnaphthalene				●●●												
		Naphthalene				●●●												
		Perylene				●●●												
		Phenanthrene				●●●												
		Pyrene				●●●												
		Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Di-n-butyl phthalate																
		Di-n-octyl phthalate																
		4-Bromophenyl phenyl ether																
		4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 5)																
		N-Nitrosodiphenylamine (NOTE 5)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●												
		2,3,4,6-Tetrachlorophenol				●●●												
		2,3,5,6-Tetrachlorophenol				●●●												
		2,3,4-Trichlorophenol				●●●												
		2,3,5-Trichlorophenol				●●●												
		2,4,5-Trichlorophenol				●●●												
		2,4,6-Trichlorophenol				●●●												
		2,4-Dimethyl phenol				●●●												
		2,4-Dinitrophenol				●●●												
		2,4-Dichlorophenol				●●●												
		2,6-Dichlorophenol				●●●												
		4,6-Dinitro-o-cresol				●●●												
		2-Chlorophenol				●●●												

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				60 days				60 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	4-Chloro-3-methylphenol				●●●												
		4-Nitrophenol				●●●												
		m-Cresol				●●●												
		o-Cresol				●●●												
		p-Cresol				●●●												
		Pentachlorophenol				●●●												
		Phenol				●●●												
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●												
		1,2,3,5-Tetrachlorobenzene				●●●												
		1,2,4,5-Tetrachlorobenzene				●●●												
		1,2,3-Trichlorobenzene				●●●												
		1,2,4-Trichlorobenzene				●●●												
		2,4,5-Trichlorotoluene				●●●												
		Hexachlorobenzene				●●●												
		Hexachlorobutadiene				●●●												
		Hexachlorocyclopentadiene				●●●												
		Hexachloroethane				●●●												
		Octachlorostyrene				●●●												
		Pentachlorobenzene				●●●												
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
2	Total cyanide	Total cyanide							●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium				●●●		●●●	●●●
		Total Kjeldahl nitrogen				●●●		●●●	●●●
4b		Nitrate + Nitrite				●●●		●●●	●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)							
9	Total metals	Aluminum				●●●	●●●	●●●	●●●
		Beryllium				●●●	●●●	●●●	●●●
		Boron				●●●	●●●	●●●	●●●
		Cadmium				●●●	●●●	●●●	●●●
		Chromium				●●●	●●●	●●●	●●●
		Cobalt			●●●		●●●	●●●	●●●
		Copper			●●●		●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
9	Total metals (continued)	Lead				●●●	●●●	●●●	●●●
		Molybdenum				●●●	●●●	●●●	●●●
		Nickel				●●●	●●●	●●●	●●●
		Silver				●●●	●●●	●●●	●●●
		Thallium				●●●	●●●	●●●	●●●
		Vanadium				●●●	●●●	●●●	●●●
		Zinc				●●●	●●●	●●●	●●●
10	Hydrides	Antimony				●●●	●●●	●●●	●●●
		Arsenic				●●●	●●●	●●●	●●●
		Selenium				●●●	●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●	●●●	●●●
12	Mercury	Mercury				●●●			
13	Total alkyl lead (NOTE 3)	Tetra-alkyl lead					●●●	●●●	
		Tri-alkyl lead					●●●	●●●	
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●	●●●		●●●
		1,1,2-Trichloroethane				●●●	●●●		●●●
		1,1-Dichloroethane				●●●	●●●		●●●
		1,1-Dichloroethylene				●●●	●●●		●●●
		1,2-Dichlorobenzene				●●●	●●●		●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●	●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
16	Volatiles, Halogenated (continued)	1,2-Dichloropropane				●●●	●●●		●●●
		1,3-Dichlorobenzene				●●●	●●●		●●●
		1,4-Dichlorobenzene				●●●	●●●		●●●
		Bromodichloromethane				●●●	●●●		●●●
		Bromoform				●●●	●●●		●●●
		Bromomethane				●●●	●●●		●●●
		Carbon tetrachloride				●●●	●●●		●●●
		Chlorobenzene				●●●	●●●		●●●
		Chloroform				●●●	●●●		●●●
		Chloromethane				●●●	●●●		●●●
		Cis-1,3-Dichloropropylene				●●●	●●●		●●●
		Dibromochloromethane				●●●	●●●		●●●
		Ethylene dibromide				●●●	●●●		●●●
		Methylene chloride				●●●	●●●		●●●
		Tetrachloroethylene (Perchloroethylene)				●●●	●●●		●●●
		Trans-1,2-Dichloroethylene				●●●	●●●		●●●
		Trans-1,3-Dichloropropylene				●●●	●●●		●●●
		Trichloroethylene				●●●	●●●		●●●
		Trichlorofluoromethane				●●●	●●●		●●●
		Vinyl chloride (Chloroethylene)				●●●	●●●		●●●
17	Volatiles, Non-Halogenated	Benzene				●●●			●●●
		Ethylbenzene				●●●			●●●
		Styrene				●●●			●●●
		Toluene				●●●			●●●
		o-Xylene				●●●			●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●			●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
19	Extractables, Base Neutral	Acenaphthene							●●●
		5-nitro Acenaphthene							●●●
		Acenaphthylene							●●●
		Anthracene							●●●
		Benz(a)anthracene							●●●
		Benzo(a)pyrene							●●●
		Benzo(b)fluoranthene							●●●
		Benzo(g,h,i)perylene							●●●
		Benzo(k)fluoranthene							●●●
		Biphenyl							●●●
		Camphene							●●●
		1-Chloronaphthalene							●●●
		2-Chloronaphthalene							●●●
		Chrysene							●●●
		Dibenz(a,h)anthracene							●●●
		Fluoranthene							●●●
		Fluorene							●●●
		Indeno(1,2,3-cd)pyrene							●●●
		Indole							●●●
		1-Methylnaphthalene							●●●
		2-Methylnaphthalene							●●●
		Naphthalene							●●●
		Perylene							●●●
		Phenanthrene							●●●
		Pyrene							●●●
		Benzyl butyl phthalate							●●●
		Bis(2-ethylhexyl) phthalate							●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
19	Extractables, Base Neutral (continued)	Di-n-butyl phthalate							•••
		Di-n-octyl phthalate							•••
		4-Bromophenyl phenyl ether							
		4-Chlorophenyl phenyl ether							
		Bis(2-chloroisopropyl)ether							
		Bis(2-chloroethyl)ether							
		Diphenyl ether							
		2,4-Dinitrotoluene							
		2,6-Dinitrotoluene							
		Bis(2-chloroethoxy)methane							
		Diphenylamine (NOTE 5)							
		N-Nitrosodiphenylamine (NOTE 5)							
		N-Nitrosodi-n-propylamine							
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol							
		2,3,4,6-Tetrachlorophenol							
		2,3,5,6-Tetrachlorophenol							
		2,3,4-Trichlorophenol							
		2,3,5-Trichlorophenol							
		2,4,5-Trichlorophenol							
		2,4,6-Trichlorophenol							
		2,4-Dimethyl phenol							
		2,4-Dinitrophenol							
		2,4-Dichlorophenol							
		2,6-Dichlorophenol							
		4,6-Dinitro-o-cresol							
		2-Chlorophenol							

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (MAITLAND)

		EFFLUENT STREAM:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
20	Extractables, Acid (Phenolics) (continued)	4-Chloro-3-methylphenol							
		4-Nitrophenol							
		m-Cresol							
		o-Cresol							
		p-Cresol							
		Pentachlorophenol							
		Phenol							
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●			●●●
		1,2,3,5-Tetrachlorobenzene				●●●			●●●
		1,2,4,5-Tetrachlorobenzene				●●●			●●●
		1,2,3-Trichlorobenzene				●●●			●●●
		1,2,4-Trichlorobenzene				●●●			●●●
		2,4,5-Trichlorotoluene				●●●			●●●
		Hexachlorobenzene				●●●			●●●
		Hexachlorobutadiene				●●●			●●●
		Hexachlorocyclopentadiene				●●●			●●●
		Hexachloroethane				●●●			●●●
		Octachlorostyrene				●●●			●●●
		Pentachlorobenzene				●●●			●●●
25	Solvent Extractables	Oil and grease			●●●		●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		EFFLUENT STREAM:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●			●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)								
9	Total metals	Aluminum				●●●				●●●
		Beryllium				●●●				●●●
		Boron				●●●				●●●
		Cadmium				●●●				●●●
		Chromium				●●●				●●●
		Cobalt				●●●				●●●
		Copper			●●●				●●●	
		Lead				●●●				●●●
		Molybdenum				●●●				●●●
		Nickel				●●●				●●●
		Silver				●●●				●●●
		Thallium				●●●				●●●
		Vanadium				●●●				●●●
		Zinc			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		EFFLUENT STREAM:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
10	Hydrides	Antimony				●●●				●●●
		Arsenic				●●●				●●●
		Selenium				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●	
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●
		1,1-Dichloroethane				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●
		1,2-Dichloropropane				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●
		Bromodichloromethane				●●●				●●●
		Bromoform				●●●				●●●
		Bromomethane				●●●				●●●
		Carbon tetrachloride				●●●				●●●
		Chlorobenzene				●●●				●●●
		Chloroform				●●●				●●●
		Chloromethane				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●
		Dibromochloromethane				●●●				●●●
		Ethylene dibromide				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		EFFLUENT STREAM:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED								
16	Volatiles, Halogenated (continued)	Methylene chloride				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●
		Trichloroethylene				●●●				●●●
		Trichlorofluoromethane				●●●				●●●
		Vinyl chloride (Chloroethylene)			●●●			●●●		
17	Volatiles, Non-Halogenated	Benzene		●●●				●●●		
		Ethylbenzene				●●●				●●●
		Styrene				●●●				●●●
		Toluene		●●●				●●●		
		o-Xylene		●●●				●●●		
		m-Xylene and p-Xylene (NOTE 4)		●●●				●●●		
19	Extractables, Base Neutral	Acenaphthene				●●●				●●●
		5-nitro Acenaphthene				●●●				●●●
		Acenaphthylene				●●●				●●●
		Anthracene				●●●				●●●
		Benz(a)anthracene				●●●				●●●
		Benzo(a)pyrene				●●●				●●●
		Benzo(b)fluoranthene				●●●				●●●
		Benzo(g,h,i)perylene				●●●				●●●
		Benzo(k)fluoranthene				●●●				●●●
		Biphenyl				●●●				●●●
		Camphene				●●●				●●●
		1-Chloronaphthalene				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		EFFLUENT STREAM:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
19	Extractables, Base Neutral (continued)	2-Chloronaphthalene				●●●				●●●
		Chrysene				●●●				●●●
		Dibenz(a,h)anthracene				●●●				●●●
		Fluoranthene				●●●				●●●
		Fluorene				●●●				●●●
		Indeno(1,2,3-cd)pyrene				●●●				●●●
		Indole				●●●				●●●
		1-Methylnaphthalene				●●●				●●●
		2-Methylnaphthalene				●●●				●●●
		Naphthalene				●●●				●●●
		Perylene				●●●				●●●
		Phenanthrene				●●●				●●●
		Pyrene				●●●				●●●
		Benzyl butyl phthalate								
		Bis(2-ethylhexyl) phthalate								
		Di-n-butyl phthalate								
		Di-n-octyl phthalate								
		4-Bromophenyl phenyl ether								
		4-Chlorophenyl phenyl ether								
		Bis(2-chloroisopropyl)ether								
		Bis(2-chloroethyl)ether								
		Diphenyl ether								
		2,4-Dinitrotoluene								
		2,6-Dinitrotoluene								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		EFFLUENT STREAM:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				180 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
19	Extractables, Base Neutral (continued)	Bis(2-chloroethoxy)methane								
		Diphenylamine (NOTE 5)								
		N-Nitrosodiphenylamine (NOTE 5)								
		N-Nitrosodi-n-propylamine								
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	PR 0200				PR 0300				CO 0100				ST 0400
		TOXICITY TESTS REQUIRED:	No				No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED													
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium													
		Total Kjeldahl nitrogen													
4b		Nitrate + Nitrite		●●●										●●●	
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●				●●●			●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●			●●●
6	Total phosphorus	Total phosphorus				●●●				●●●			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●			●●●
		Volatile suspended solids (VSS)													
9	Total metals	Aluminum		●●●				●●●						●●●	●●●
		Beryllium				●●●				●●●				●●●	●●●
		Boron				●●●				●●●				●●●	●●●
		Cadmium				●●●				●●●				●●●	●●●
		Chromium				●●●				●●●				●●●	●●●
		Cobalt				●●●				●●●				●●●	●●●
		Copper				●●●				●●●				●●●	●●●
		Lead		●●●			●●●					●●●			●●●
		Molybdenum				●●●				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	PR 0200				PR 0300				CO 0100				ST 0400
		TOXICITY TESTS REQUIRED:	No				No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED													
9	Total metals (continued)	Nickel				●●●				●●●				●●●	●●●
		Silver				●●●				●●●				●●●	●●●
		Thallium				●●●				●●●				●●●	●●●
		Vanadium				●●●				●●●				●●●	●●●
		Zinc				●●●				●●●				●●●	●●●
10	Hydrides	Antimony				●●●				●●●				●●●	●●●
		Arsenic				●●●				●●●				●●●	●●●
		Selenium				●●●				●●●				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●	●●●
12	Mercury	Mercury				●●●				●●●				●●●	●●●
13	Total alkyl lead (NOTE 3)	Tetra-alkyl lead		●●●			●●●					●●●			●●●
		Tri-alkyl lead		●●●			●●●					●●●			●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●						●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●	●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●	●●●
		1,1-Dichloroethane		●●●						●●●				●●●	●●●
		1,1-Dichloroethylene				●●●				●●●				●●●	●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)		●●●				●●●						●●●	●●●
		1,2-Dichloropropane				●●●				●●●				●●●	●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	PR 0200				PR 0300				CO 0100				ST 0400
		TOXICITY TESTS REQUIRED:	No				No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED													
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene				●●●				●●●				●●●	●●●
		Bromodichloromethane				●●●				●●●				●●●	●●●
		Bromoform				●●●				●●●				●●●	●●●
		Bromomethane				●●●				●●●				●●●	●●●
		Carbon tetrachloride				●●●				●●●				●●●	●●●
		Chlorobenzene				●●●				●●●				●●●	●●●
		Chloroform				●●●				●●●				●●●	●●●
		Chloromethane		●●●				●●●						●●●	●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●	●●●
		Dibromochloromethane				●●●				●●●				●●●	●●●
		Ethylene dibromide		●●●				●●●						●●●	●●●
		Methylene chloride		●●●				●●●						●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●	●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●	●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●	●●●
		Trichloroethylene				●●●				●●●				●●●	●●●
		Trichlorofluoromethane				●●●				●●●				●●●	●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●	●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●	●●●
		Ethylbenzene				●●●				●●●				●●●	●●●
		Styrene				●●●				●●●				●●●	●●●
		Toluene				●●●				●●●				●●●	●●●
		o-Xylene				●●●				●●●				●●●	●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	PR 0200				PR 0300				CO 0100				ST 0400
		TOXICITY TESTS REQUIRED:	No				No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED													
19	Extractables, Base Neutral	Acenaphthene						●●●						●●●	●●●
		5-nitro Acenaphthene								●●●				●●●	●●●
		Acenaphthylene							●●●					●●●	●●●
		Anthracene								●●●				●●●	●●●
		Benz(a)anthracene								●●●				●●●	●●●
		Benzo(a)pyrene								●●●				●●●	●●●
		Benzo(b)fluoranthene								●●●				●●●	●●●
		Benzo(g,h,i)perylene								●●●				●●●	●●●
		Benzo(k)fluoranthene								●●●				●●●	●●●
		Biphenyl								●●●				●●●	●●●
		Camphene								●●●				●●●	●●●
		1-Chloronaphthalene								●●●				●●●	●●●
		2-Chloronaphthalene								●●●				●●●	●●●
		Chrysene								●●●				●●●	●●●
		Dibenz(a,h)anthracene								●●●				●●●	●●●
		Fluoranthene								●●●				●●●	●●●
		Fluorene						●●●						●●●	●●●
		Indeno(1,2,3-cd)pyrene								●●●				●●●	●●●
		Indole								●●●				●●●	●●●
		1-Methylnaphthalene								●●●				●●●	●●●
		2-Methylnaphthalene								●●●				●●●	●●●
		Naphthalene						●●●						●●●	●●●
		Perylene								●●●				●●●	●●●
		Phenanthrene							●●●					●●●	●●●
		Pyrene								●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	PR 0200				PR 0300				CO 0100				ST 0400
		TOXICITY TESTS REQUIRED:	No				No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED													
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate								●●●				●●●	
		Bis(2-ethylhexyl) phthalate								●●●				●●●	
		Di-n-butyl phthalate								●●●				●●●	
		Di-n-octyl phthalate								●●●				●●●	
		4-Bromophenyl phenyl ether								●●●				●●●	
		4-Chlorophenyl phenyl ether								●●●				●●●	
		Bis(2-chloroisopropyl)ether								●●●				●●●	
		Bis(2-chloroethyl)ether								●●●				●●●	
		Diphenyl ether								●●●				●●●	
		2,4-Dinitrotoluene								●●●				●●●	
		2,6-Dinitrotoluene								●●●				●●●	
		Bis(2-chloroethoxy)methane								●●●				●●●	
		Diphenylamine (NOTE 5)								●●●				●●●	
		N-Nitrosodiphenylamine (NOTE 5)								●●●				●●●	
		N-Nitrosodi-n-propylamine								●●●				●●●	
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:		
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:		
		FREQUENCY OF SAMPLING:	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium		
		Total Kjeldahl nitrogen		
4b		Nitrate + Nitrite		
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●	●●●
6	Total phosphorus	Total phosphorus	●●●	●●●
7	Specific conductance	Specific conductance	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●	●●●
		Volatile suspended solids (VSS)		
9	Total metals	Aluminum	●●●	●●●
		Beryllium	●●●	●●●
		Boron	●●●	●●●
		Cadmium	●●●	●●●
		Chromium	●●●	●●●
		Cobalt	●●●	●●●
		Copper	●●●	●●●
		Lead	●●●	●●●
		Molybdenum	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
9	Total metals (continued)	Nickel	●●●	●●●
		Silver	●●●	●●●
		Thallium	●●●	●●●
		Vanadium	●●●	●●●
		Zinc	●●●	●●●
10	Hydrides	Antimony	●●●	●●●
		Arsenic	●●●	●●●
		Selenium	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●	●●●
12	Mercury	Mercury	●●●	●●●
13	Total alkyl lead (NOTE 3)	Tetra-alkyl lead	●●●	●●●
		Tri-alkyl lead	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	●●●	●●●
		1,1,2-Trichloroethane	●●●	●●●
		1,1-Dichloroethane	●●●	●●●
		1,1-Dichloroethylene	●●●	●●●
		1,2-Dichlorobenzene	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)	●●●	●●●
		1,2-Dichloropropane	●●●	●●●
		1,3-Dichlorobenzene	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24): **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24: **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		FREQUENCY OF SAMPLING:	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene	●●●	●●●
		Bromodichloromethane	●●●	●●●
		Bromoform	●●●	●●●
		Bromomethane	●●●	●●●
		Carbon tetrachloride	●●●	●●●
		Chlorobenzene	●●●	●●●
		Chloroform	●●●	●●●
		Chloromethane	●●●	●●●
		Cis-1,3-Dichloropropylene	●●●	●●●
		Dibromochloromethane	●●●	●●●
		Ethylene dibromide	●●●	●●●
		Methylene chloride	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)	●●●	●●●
		Trans-1,2-Dichloroethylene	●●●	●●●
		Trans-1,3-Dichloropropylene	●●●	●●●
		Trichloroethylene	●●●	●●●
		Trichlorofluoromethane	●●●	●●●
		Vinyl chloride (Chloroethylene)	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene	●●●	●●●
		Ethylbenzene	●●●	●●●
		Styrene	●●●	●●●
		Toluene	●●●	●●●
		o-Xylene	●●●	●●●
		m-Xylene and p-Xylene (NOTE 4)	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED		
19	Extractables, Base Neutral	Acenaphthene	●●●	●●●
		5-nitro Acenaphthene	●●●	●●●
		Acenaphthylene	●●●	●●●
		Anthracene	●●●	●●●
		Benz(a)anthracene	●●●	●●●
		Benzo(a)pyrene	●●●	●●●
		Benzo(b)fluoranthene	●●●	●●●
		Benzo(g,h,i)perylene	●●●	●●●
		Benzo(k)fluoranthene	●●●	●●●
		Biphenyl	●●●	●●●
		Camphene	●●●	●●●
		1-Chloronaphthalene	●●●	●●●
		2-Chloronaphthalene	●●●	●●●
		Chrysene	●●●	●●●
		Dibenz(a,h)anthracene	●●●	●●●
		Fluoranthene	●●●	●●●
		Fluorene	●●●	●●●
		Indeno(1,2,3-cd)pyrene	●●●	●●●
		Indole	●●●	●●●
		1-Methylnaphthalene	●●●	●●●
		2-Methylnaphthalene	●●●	●●●
		Naphthalene	●●●	●●●
		Perylene	●●●	●●●
		Phenanthrene	●●●	●●●
		Pyrene	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ETHYL CANADA INC. (CORUNNA)

		EFFLUENT STREAM:	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: **CHARACTERIZATION SAMPLING MINIMUM INTERVAL:**	None	None
		FREQUENCY OF SAMPLING:	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate		
		Bis(2-ethylhexyl) phthalate		
		Di-n-butyl phthalate		
		Di-n-octyl phthalate		
		4-Bromophenyl phenyl ether		
		4-Chlorophenyl phenyl ether		
		Bis(2-chloroisopropyl)ether		
		Bis(2-chloroethyl)ether		
		Diphenyl ether		
		2,4-Dinitrotoluene		
		2,6-Dinitrotoluene		
		Bis(2-chloroethoxy)methane		
		Diphenylamine (NOTE 5)		
		N-Nitrosodiphenylamine (NOTE 5)		
		N-Nitrosodi-n-propylamine		
25	Solvent Extractables	Oil and grease	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 0 - 6E PLASTICS CANADA LIMITED (COBOURG)

		EFFLUENT STREAM:	CO 0100				ST 0200	ST 0300
		TOXICITY TESTS REQUIRED:	Yes				No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Semi-annually				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED						
2	Total cyanide	Total cyanide		●●●			●●●	●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●				
		Total Kjeldahl nitrogen		●●●				
4b		Nitrate + Nitrite		●●●				
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●	●●●
6	Total phosphorus	Total phosphorus		●●●			●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●	●●●
		Volatile suspended solids (VSS)	●●●					
9	Total metals	Aluminum		●●●			●●●	●●●
		Beryllium				●●●	●●●	●●●
		Boron				●●●	●●●	●●●
		Cadmium				●●●	●●●	●●●
		Chromium				●●●	●●●	●●●
		Cobalt				●●●	●●●	●●●
		Copper		●●●			●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 0 – GE PLASTICS CANADA LIMITED (COBOURG)

		EFFLUENT STREAM:	CO 0100				ST 0200	ST 0300
		TOXICITY TESTS REQUIRED:	Yes				No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Semi-annually				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**						
9	Total metals (continued)	Lead				●●●	●●●	●●●
		Molybdenum				●●●	●●●	●●●
		Nickel				●●●	●●●	●●●
		Silver				●●●	●●●	●●●
		Thallium				●●●	●●●	●●●
		Vanadium				●●●	●●●	●●●
		Zinc		●●●			●●●	●●●
10	Hydrides	Antimony		●●●			●●●	●●●
		Arsenic				●●●	●●●	●●●
		Selenium				●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●	●●●
12	Mercury	Mercury		●●●			●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●		●●●	●●●
17	Volatiles, Non-Halogenated	Benzene				●●●	●●●	●●●
		Ethylbenzene				●●●	●●●	●●●
		Styrene			●●●		●●●	●●●
		Toluene				●●●	●●●	●●●
		o-Xylene				●●●	●●●	●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●	●●●	●●●
18	Volatiles, Water Soluble	Acrolein				●●●	●●●	●●●
		Acrylonitrile			●●●		●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE O - GE PLASTICS CANADA LIMITED (COBOURG)

EFFLUENT STREAM:			CO 0100				ST 0200	ST 0300
TOXICITY TESTS REQUIRED:			Yes				No	No
CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):			Semi-annually				None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			180 days					
CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:			Quarterly				None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days					
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**						
25	Solvent Extractables	Oil and grease			●●●		●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE P – NOVACOR CHEMICALS LTD. (MOORETOWN)

		EFFLUENT STREAM:	CO 0100				ST 0200
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Semi-annually				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Semi-annually				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	180 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)					
9	Total metals	Aluminum				●●●	●●●
		Beryllium				●●●	●●●
		Boron				●●●	●●●
		Cadmium				●●●	●●●
		Chromium			●●●		●●●
		Cobalt				●●●	●●●
		Copper				●●●	●●●
		Lead				●●●	●●●
		Molybdenum				●●●	●●●
		Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc			●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE P - NOVACOR CHEMICALS LTD. (MOORETOWN)

EFFLUENT STREAM:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):			Semi-annually				None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			180 days				
CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:			Semi-annually				None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			180 days				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
10	Hydrides	Antimony				●●●	●●●
		Arsenic			●●●		●●●
		Selenium				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)			●●●		●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●	●●●
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 0300				PR 0800				PR 0900				PR 1000			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
2	Total cyanide	Total cyanide								●●●							●●●	
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium																●●●
		Total Kjeldahl nitrogen																●●●
4b		Nitrate + Nitrite																●●●
5a	Organic carbon	Dissolved organic carbon (DOC)		●●●			●●●					●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum		●●●						●●●		●●●				●●●		
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 0300				PR 0800				PR 0900				PR 1000			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●
		Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●				●●●		●●●						●●●
10	Hydrides	Antimony												●●●				●●●
		Arsenic												●●●				●●●
		Selenium												●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
12	Mercury	Mercury																
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●					●●●			●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)			●●●				●●●					●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 0300				PR 0800				PR 0900				PR 1000			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Bromodichloromethane				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●		●●●						●●●
		Carbon tetrachloride				●●●				●●●				●●●				●●●
		Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform				●●●				●●●				●●●				●●●
		Chloromethane			●●●					●●●		●●●					●●●	
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride				●●●				●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●				●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene		●●●				●●●				●●●					●●●	
		Ethylbenzene				●●●				●●●				●●●				●●●
		Styrene				●●●				●●●				●●●				●●●
		Toluene				●●●				●●●				●●●				●●●
		o-Xylene				●●●				●●●		●●●						●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●		●●●						●●●
18	Volatiles, Water Soluble	Acrolein				●●●				●●●				●●●				
		Acrylonitrile				●●●				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 0300				PR 0800				PR 0900				PR 1000			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral	Acenaphthene								●●●								
		5-nitro Acenaphthene								●●●								
		Acenaphthylene								●●●								
		Anthracene								●●●								
		Benz(a)anthracene								●●●								
		Benzo(a)pyrene								●●●								
		Benzo(b)fluoranthene								●●●								
		Benzo(g,h,i)perylene								●●●								
		Benzo(k)fluoranthene								●●●								
		Biphenyl								●●●								
		Camphene								●●●								
		1-Chloronaphthalene								●●●								
		2-Chloronaphthalene								●●●								
		Chrysene								●●●								
		Dibenz(a,h)anthracene								●●●								
		Fluoranthene								●●●								
		Fluorene								●●●								
		Indeno(1,2,3-cd)pyrene								●●●								
		Indole								●●●								
		1-Methylnaphthalene								●●●								
		2-Methylnaphthalene								●●●								
		Naphthalene								●●●								
		Perylene								●●●								
		Phenanthrene								●●●								
		Pyrene								●●●								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 0300				PR 0800				PR 0900				PR 1000			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																
		Di-n-octyl phthalate																
		4-Bromophenyl phenyl ether																
		4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 5)																
		N-Nitrosodiphenylamine (NOTE 5)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,4-Trichlorophenol				●●●				●●●				●●●				●●●
		2,3,5-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4,5-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4,6-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4-Dimethyl phenol				●●●				●●●				●●●				●●●
		2,4-Dinitrophenol				●●●				●●●				●●●				●●●
		2,4-Dichlorophenol				●●●				●●●				●●●				●●●
		2,6-Dichlorophenol				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 0300				PR 0800				PR 0900				PR 1000			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol				●●●				●●●				●●●				●●●
		2-Chlorophenol				●●●				●●●				●●●				●●●
		4-Chloro-3-methylphenol				●●●				●●●				●●●				●●●
		4-Nitrophenol				●●●				●●●				●●●				●●●
		m-Cresol				●●●				●●●				●●●				●●●
		o-Cresol				●●●				●●●				●●●				●●●
		p-Cresol				●●●				●●●				●●●				●●●
		Pentachlorophenol				●●●				●●●				●●●				●●●
		Phenol				●●●				●●●				●●●				●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,3-Trichlorobenzene				●●●				●●●				●●●				●●●
		1,2,4-Trichlorobenzene				●●●				●●●				●●●				●●●
		2,4,5-Trichlorotoluene				●●●				●●●				●●●				●●●
		Hexachlorobenzene				●●●				●●●				●●●				●●●
		Hexachlorobutadiene				●●●				●●●				●●●				●●●
		Hexachlorocyclopentadiene				●●●				●●●				●●●				●●●
		Hexachloroethane				●●●				●●●				●●●				●●●
		Octachlorostyrene				●●●				●●●				●●●				●●●
		Pentachlorobenzene				●●●				●●●				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 1800				PR 1900				CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
2	Total cyanide	Total cyanide			●●●				●●●									
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium		●●●						●●●								
		Total Kjeldahl nitrogen		●●●						●●●								
4b		Nitrate + Nitrite		●●●						●●●								
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●					●●●			●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus		●●●					●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)	●●●															
9	Total metals	Aluminum		●●●				●●●						●●●				●●●
		Beryllium			●●●					●●●				●●●				●●●
		Boron			●●●					●●●				●●●				●●●
		Cadmium			●●●					●●●				●●●				●●●
		Chromium			●●●					●●●				●●●				●●●
		Cobalt			●●●					●●●				●●●				●●●
		Copper			●●●					●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 1800				PR 1900				CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead			●●●					●●●				●●●				●●●
		Molybdenum			●●●					●●●				●●●				●●●
		Nickel			●●●					●●●				●●●				●●●
		Silver			●●●					●●●				●●●				●●●
		Thallium			●●●					●●●				●●●				●●●
		Vanadium			●●●					●●●				●●●				●●●
		Zinc		●●●						●●●				●●●				●●●
10	Hydrides	Antimony			●●●					●●●								
		Arsenic			●●●					●●●								
		Selenium			●●●					●●●								
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)			●●●					●●●				●●●				●●●
12	Mercury	Mercury			●●●													●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●						●●●				●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane			●●●					●●●				●●●				●●●
		1,1,2-Trichloroethane			●●●					●●●				●●●				●●●
		1,1-Dichloroethane			●●●					●●●				●●●				●●●
		1,1-Dichloroethylene			●●●					●●●				●●●				●●●
		1,2-Dichlorobenzene			●●●					●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)			●●●					●●●				●●●				●●●
		1,2-Dichloropropane			●●●					●●●				●●●				●●●
		1,3-Dichlorobenzene			●●●					●●●				●●●				●●●
		1,4-Dichlorobenzene			●●●					●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 1800				PR 1900				CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Bromodichloromethane			●●●					●●●				●●●				●●●
		Bromoform		●●●						●●●				●●●				●●●
		Bromomethane			●●●					●●●				●●●				●●●
		Carbon tetrachloride			●●●					●●●				●●●				●●●
		Chlorobenzene			●●●					●●●				●●●				●●●
		Chloroform			●●●					●●●				●●●				●●●
		Chloromethane		●●●					●●●					●●●				●●●
		Cis-1,3-Dichloropropylene			●●●					●●●				●●●				●●●
		Dibromochloromethane			●●●					●●●				●●●				●●●
		Ethylene dibromide			●●●					●●●				●●●				●●●
		Methylene chloride		●●●						●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)			●●●					●●●				●●●				●●●
		Trans-1,2-Dichloroethylene			●●●					●●●				●●●				●●●
		Trans-1,3-Dichloropropylene			●●●					●●●				●●●				●●●
		Trichloroethylene			●●●					●●●				●●●				●●●
		Trichlorofluoromethane			●●●					●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)			●●●					●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene		●●●					●●●				●●●					●●●
		Ethylbenzene			●●●					●●●				●●●				●●●
		Styrene			●●●					●●●				●●●				●●●
		Toluene			●●●					●●●				●●●				●●●
		o-Xylene			●●●					●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 4)			●●●					●●●				●●●				●●●
18	Volatiles, Water Soluble	Acrolein			●●●									●●●				
		Acrylonitrile			●●●									●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 1800				PR 1900				CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral	Acenaphthene			●●●													
		5-nitro Acenaphthene			●●●													
		Acenaphthylene			●●●													
		Anthracene			●●●													
		Benz(a)anthracene			●●●													
		Benzo(a)pyrene			●●●													
		Benzo(b)fluoranthene			●●●													
		Benzo(g,h,i)perylene			●●●													
		Benzo(k)fluoranthene			●●●													
		Biphenyl			●●●													
		Camphene			●●●													
		1-Chloronaphthalene			●●●													
		2-Chloronaphthalene			●●●													
		Chrysene			●●●													
		Dibenz(a,h)anthracene			●●●													
		Fluoranthene			●●●													
		Fluorene			●●●													
		Indeno(1,2,3-cd)pyrene			●●●													
		Indole			●●●													
		1-Methylnaphthalene			●●●													
		2-Methylnaphthalene			●●●													
		Naphthalene			●●●													
		Perylene			●●●													
		Phenanthrene			●●●													
		Pyrene			●●●													

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	PR 1800				PR 1900				CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate			●●●													
		Bis(2-ethylhexyl) phthalate			●●●													
		Di-n-butyl phthalate			●●●													
		Di-n-octyl phthalate			●●●													
		4-Bromophenyl pheny! ether			●●●													
		4-Chlorophenyl phenyl ether			●●●													
		Bis(2-chloroisopropyl)ether			●●●													
		Bis(2-chloroethyl)ether			●●●													
		Diphenyl ether			●●●													
		2,4-Dinitrotoluene			●●●													
		2,6-Dinitrotoluene			●●●													
		Bis(2-chloroethoxy)methane			●●●													
		Diphenylamine (NOTE 5)			●●●													
		N-Nitrosodiphenylamine (NOTE 5)			●●●													
		N-Nitrosodi-n-propylamine			●●●													
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol			●●●					●●●								●●●
		2,3,4,6-Tetrachlorophenol			●●●					●●●								●●●
		2,3,5,6-Tetrachlorophenol			●●●					●●●								●●●
		2,3,4-Trichlorophenol			●●●					●●●								●●●
		2,3,5-Trichlorophenol			●●●					●●●								●●●
		2,4,5-Trichlorophenol			●●●					●●●								●●●
		2,4,6-Trichlorophenol			●●●					●●●								●●●
		2,4-Dimethyl phenol			●●●					●●●								●●●
		2,4-Dinitrophenol			●●●					●●●								●●●
		2,4-Dichlorophenol			●●●					●●●								●●●
		2,6-Dichlorophenol			●●●					●●●								●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 0 - POLYSAR LIMITED (SARNIA)

			PR 1800				PR 1900				CO 0200				CO 0400			
EFFLUENT STREAM:			PR 1800				PR 1900				CO 0200				CO 0400			
TOXICITY TESTS REQUIRED:			Yes				No				Yes				Yes			
CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				Quarterly			
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days				60 days				60 days				60 days			
CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:			Quarterly				Quarterly				Quarterly				Quarterly			
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days				60 days				60 days				60 days			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol			●●●					●●●								●●●
		2-Chlorophenol			●●●					●●●								●●●
		4-Chloro-3-methylphenol			●●●					●●●								●●●
		4-Nitrophenol			●●●					●●●								●●●
		m-Cresol			●●●					●●●								●●●
		o-Cresol			●●●					●●●								●●●
		p-Cresol			●●●					●●●								●●●
		Pentachlorophenol			●●●					●●●								●●●
		Phenol			●●●					●●●								●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene			●●●					●●●				●●●				●●●
		1,2,3,5-Tetrachlorobenzene			●●●					●●●				●●●				●●●
		1,2,4,5-Tetrachlorobenzene			●●●					●●●				●●●				●●●
		1,2,3-Trichlorobenzene			●●●					●●●				●●●				●●●
		1,2,4-Trichlorobenzene			●●●					●●●				●●●				●●●
		2,4,5-Trichlorotoluene			●●●					●●●				●●●				●●●
		Hexachlorobenzene			●●●					●●●				●●●				●●●
		Hexachlorobutadiene			●●●					●●●				●●●				●●●
		Hexachlorocyclopentadiene			●●●					●●●				●●●				●●●
		Hexachloroethane			●●●					●●●				●●●				●●●
		Octachlorostyrene			●●●					●●●				●●●				●●●
		Pentachlorobenzene			●●●					●●●				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)			●●●													

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	CO 0500				CO 1100				BA 1700				OT 1400	OT 1600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED														
2	Total cyanide	Total cyanide								●●●						
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium														
		Total Kjeldahl nitrogen														
4b		Nitrate + Nitrite														
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●				●●●				●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●			●●●	●●●
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●		●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●			●●●	●●●
		Volatile suspended solids (VSS)														
9	Total metals	Aluminum								●●●				●●●	●●●	●●●
		Beryllium								●●●				●●●	●●●	●●●
		Boron								●●●				●●●	●●●	●●●
		Cadmium								●●●				●●●	●●●	●●●
		Chromium								●●●				●●●	●●●	●●●
		Cobalt								●●●				●●●	●●●	●●●
		Copper								●●●				●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	CO 0500				CO 1100				BA 1700				OT 1400	OT 1600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED														
9	Total metals (continued)	Lead								●●●				●●●	●●●	●●●
		Molybdenum								●●●				●●●	●●●	●●●
		Nickel								●●●				●●●	●●●	●●●
		Silver								●●●				●●●	●●●	●●●
		Thallium								●●●				●●●	●●●	●●●
		Vanadium								●●●				●●●	●●●	●●●
		Zinc								●●●				●●●	●●●	●●●
10	Hydrides	Antimony								●●●						
		Arsenic								●●●						
		Selenium								●●●						
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)								●●●				●●●	●●●	●●●
12	Mercury	Mercury														
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●				●●●						●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●					●●●	●●●
		1,1,2-Trichloroethane				●●●				●●●					●●●	●●●
		1,1-Dichloroethane				●●●				●●●					●●●	●●●
		1,1-Dichloroethylene				●●●				●●●					●●●	●●●
		1,2-Dichlorobenzene				●●●				●●●					●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●					●●●	●●●
		1,2-Dichloropropane				●●●				●●●					●●●	●●●
		1,3-Dichlorobenzene				●●●				●●●					●●●	●●●
		1,4-Dichlorobenzene				●●●				●●●					●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	CO 0500				CO 1100				BA 1700				OT 1400	OT 1600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED														
16	Volatiles, Halogenated (continued)	Bromodichloromethane				●●●				●●●					●●●	●●●
		Bromoform				●●●				●●●					●●●	●●●
		Bromomethane				●●●				●●●					●●●	●●●
		Carbon tetrachloride				●●●				●●●					●●●	●●●
		Chlorobenzene				●●●				●●●					●●●	●●●
		Chloroform				●●●				●●●					●●●	●●●
		Chloromethane				●●●				●●●					●●●	●●●
		Cis-1,3-Dichloropropylene				●●●				●●●					●●●	●●●
		Dibromochloromethane				●●●				●●●					●●●	●●●
		Ethylene dibromide				●●●				●●●					●●●	●●●
		Methylene chloride				●●●				●●●					●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●					●●●	●●●
		Trans-1,2-Dichloroethylene				●●●				●●●					●●●	●●●
		Trans-1,3-Dichloropropylene				●●●				●●●					●●●	●●●
		Trichloroethylene				●●●				●●●					●●●	●●●
		Trichlorofluoromethane				●●●				●●●					●●●	●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●					●●●	●●●
17	Volatiles, Non-Halogenated	Benzene			●●●				●●●						●●●	●●●
		Ethylbenzene				●●●				●●●					●●●	●●●
		Styrene				●●●				●●●					●●●	●●●
		Toluene				●●●				●●●					●●●	●●●
		o-Xylene				●●●				●●●					●●●	●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●					●●●	●●●
18	Volatiles, Water Soluble	Acrolein				●●●				●●●					●●●	●●●
		Acrylonitrile				●●●				●●●					●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	CO 0500				CO 1100				BA 1700				OT 1400	OT 1600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED														
19	Extractables, Base Neutral	Acenaphthene				●●●										
		5-nitro Acenaphthene				●●●										
		Acenaphthylene				●●●										
		Anthracene				●●●										
		Benz(a)anthracene				●●●										
		Benzo(a)pyrene				●●●										
		Benzo(b)fluoranthene				●●●										
		Benzo(g,h,i)perylene				●●●										
		Benzo(k)fluoranthene				●●●										
		Biphenyl				●●●										
		Camphene				●●●										
		1-Chloronaphthalene				●●●										
		2-Chloronaphthalene				●●●										
		Chrysene				●●●										
		Dibenz(a,h)anthracene				●●●										
		Fluoranthene				●●●										
		Fluorene				●●●										
		Indeno(1,2,3-cd)pyrene				●●●										
		Indole				●●●										
		1-Methylnaphthalene				●●●										
		2-Methylnaphthalene				●●●										
		Naphthalene				●●●										
		Perylene				●●●										
		Phenanthrene				●●●										
		Pyrene				●●●										

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	CO 0500				CO 1100				BA 1700				OT 1400	OT 1600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED														
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate														
		Bis(2-ethylhexyl) phthalate														
		Di-n-butyl phthalate														
		Di-n-octyl phthalate														
		4-Bromophenyl phenyl ether														
		4-Chlorophenyl phenyl ether														
		Bis(2-chloroisopropyl)ether														
		Bis(2-chloroethyl)ether														
		Diphenyl ether														
		2,4-Dinitrotoluene														
		2,6-Dinitrotoluene														
		Bis(2-chloroethoxy)methane														
		Diphenylamine (NOTE 5)														
		N-Nitrosodiphenylamine (NOTE 5)														
		N-Nitrosodi-n-propylamine														
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol								•••						
		2,3,4,6-Tetrachlorophenol								•••						
		2,3,5,6-Tetrachlorophenol								•••						
		2,3,4-Trichlorophenol								•••						
		2,3,5-Trichlorophenol								•••						
		2,4,5-Trichlorophenol								•••						
		2,4,6-Trichlorophenol								•••						
		2,4-Dimethyl phenol								•••						
		2,4-Dinitrophenol								•••						
		2,4-Dichlorophenol								•••						
		2,6-Dichlorophenol								•••						

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	CO 0500				CO 1100				BA 1700				OT 1400	OT 1600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days					
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED														
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol								●●●						
		2-Chlorophenol								●●●						
		4-Chloro-3-methylphenol								●●●						
		4-Nitrophenol								●●●						
		m-Cresol								●●●						
		o-Cresol								●●●						
		p-Cresol								●●●						
		Pentachlorophenol								●●●						
		Phenol								●●●						
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●						
		1,2,3,5-Tetrachlorobenzene				●●●				●●●						
		1,2,4,5-Tetrachlorobenzene				●●●				●●●						
		1,2,3-Trichlorobenzene				●●●				●●●						
		1,2,4-Trichlorobenzene				●●●				●●●						
		2,4,5-Trichlorotoluene				●●●				●●●						
		Hexachlorobenzene				●●●				●●●						
		Hexachlorobutadiene				●●●				●●●						
		Hexachlorocyclopentadiene				●●●				●●●						
		Hexachloroethane				●●●				●●●						
		Octachlorostyrene				●●●				●●●						
		Pentachlorobenzene				●●●				●●●						
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●		●●●	●●●
27	PCBs	PCBs (Total)														

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No	No	No	No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		FREQUENCY OF SAMPLING:	M	M	M	M	M	during discharge	during d scharge
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED							
2	Total cyanide	Total cyanide						●●●	●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium						●●●	●●●
		Total Kjeldahl nitrogen						●●●	●●●
4b		Nitrate + Nitrite						●●●	●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
6	Total phosphorus	Total phosphorus	●●●	●●●	●●●	●●●	●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●	●●●	●●●	●●●	●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Volatile suspended solids (VSS)			●●●				
9	Total metals	Aluminum	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Beryllium	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Boron	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Cadmium	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chromium	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Cobalt	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Copper	●●●	●●●	●●●	●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No	No	No	No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		FREQUENCY OF SAMPLING:	M	M	M	M	M	during discharge	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
9	Total metals (continued)	Lead	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Molybdenum	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Nickel	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Silver	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Thallium	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Vanadium	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Zinc	●●●	●●●	●●●	●●●	●●●	●●●	●●●
10	Hydrides	Antimony	●●●		●●●	●●●	●●●	●●●	●●●
		Arsenic	●●●		●●●	●●●	●●●	●●●	●●●
		Selenium	●●●		●●●	●●●	●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
12	Mercury	Mercury							
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●	●●●	●●●	●●●	●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,1,2-Trichloroethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,1-Dichloroethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,1-Dichloroethylene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,2-Dichlorobenzene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,2-Dichloropropane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,3-Dichlorobenzene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,4-Dichlorobenzene	●●●	●●●	●●●	●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No	No	No	No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		FREQUENCY OF SAMPLING:	M	M	M	M	M	during discharge	during discharge
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED							
16	Volatiles, Halogenated (continued)	Bromodichloromethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Bromoform	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Bromomethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Carbon tetrachloride	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chlorobenzene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chloroform	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chloromethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Cis-1,3-Dichloropropylene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Dibromochloromethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Ethylene dibromide	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Methylene chloride	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trans-1,2-Dichloroethylene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trans-1,3-Dichloropropylene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trichloroethylene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trichlorofluoromethane	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Vinyl chloride (Chloroethylene)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Ethylbenzene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Styrene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Toluene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		o-Xylene	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		m-Xylene and p-Xylene (NOTE 4)	●●●	●●●	●●●	●●●	●●●	●●●	●●●
18	Volatiles, Water Soluble	Acrolein	●●●	●●●	●●●	●●●	●●●	●●●	
		Acrylonitrile	●●●	●●●	●●●	●●●	●●●	●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No	No	No	No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		FREQUENCY OF SAMPLING:	M	M	M	M	M	during discharge	during discharge
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED							
19	Extractables, Base Neutral	Acenaphthene						●●●	
		5-nitro Acenaphthene						●●●	
		Acenaphthylene						●●●	
		Anthracene						●●●	
		Benz(a)anthracene						●●●	
		Benzo(a)pyrene						●●●	
		Benzo(b)fluoranthene						●●●	
		Benzo(g,h,i)perylene						●●●	
		Benzo(k)fluoranthene						●●●	
		Biphenyl						●●●	
		Camphene						●●●	
		1-Chloronaphthalene						●●●	
		2-Chloronaphthalene						●●●	
		Chrysene						●●●	
		Dibenz(a,h)anthracene						●●●	
		Fluoranthene						●●●	
		Fluorene						●●●	
		Indeno(1,2,3-cd)pyrene						●●●	
		Indole						●●●	
		1-Methylnaphthalene						●●●	
		2-Methylnaphthalene						●●●	
		Naphthalene						●●●	
		Perylene						●●●	
		Phenanthrene						●●●	
		Pyrene						●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No	No	No	No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24): CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24: CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	None	None	None	None	None	None	None
		FREQUENCY OF SAMPLING:	M	M	M	M	M	during discharge	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate						●●●	
		Bis(2-ethylhexyl) phthalate						●●●	
		Di-n-butyl phthalate						●●●	
		Di-n-octyl phthalate						●●●	
		4-Bromophenyl phenyl ether						●●●	
		4-Chlorophenyl phenyl ether						●●●	
		Bis(2-chloroisopropyl)ether						●●●	
		Bis(2-chloroethyl)ether						●●●	
		Diphenyl ether						●●●	
		2,4-Dinitrotoluene						●●●	
		2,6-Dinitrotoluene						●●●	
		Bis(2-chloroethoxy)methane						●●●	
		Diphenylamine (NOTE 5)						●●●	
		N-Nitrosodiphenylamine (NOTE 5)						●●●	
		N-Nitrosodi-n-propylamine						●●●	
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol			●●●	●●●	●●●	●●●	●●●
		2,3,4,6-Tetrachlorophenol			●●●	●●●	●●●	●●●	●●●
		2,3,5,6-Tetrachlorophenol			●●●	●●●	●●●	●●●	●●●
		2,3,4-Trichlorophenol			●●●	●●●	●●●	●●●	●●●
		2,3,5-Trichlorophenol			●●●	●●●	●●●	●●●	●●●
		2,4,5-Trichlorophenol			●●●	●●●	●●●	●●●	●●●
		2,4,6-Trichlorophenol			●●●	●●●	●●●	●●●	●●●
		2,4-Dimethyl phenol			●●●	●●●	●●●	●●●	●●●
		2,4-Dinitrophenol			●●●	●●●	●●●	●●●	●●●
		2,4-Dichlorophenol			●●●	●●●	●●●	●●●	●●●
		2,6-Dichlorophenol			●●●	●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		EFFLUENT STREAM:	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No	No	No	No	No	No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	None	None	None	None	None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:							
		FREQUENCY OF SAMPLING:	M	M	M	M	M	during discharge	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol			●●●	●●●	●●●	●●●	●●●
		2-Chlorophenol			●●●	●●●	●●●	●●●	●●●
		4-Chloro-3-methylphenol			●●●	●●●	●●●	●●●	●●●
		4-Nitrophenol			●●●	●●●	●●●	●●●	●●●
		m-Cresol			●●●	●●●	●●●	●●●	●●●
		o-Cresol			●●●	●●●	●●●	●●●	●●●
		p-Cresol			●●●	●●●	●●●	●●●	●●●
		Pentachlorophenol			●●●	●●●	●●●	●●●	●●●
		Phenol			●●●	●●●	●●●	●●●	●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
		1,2,3,5-Tetrachlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
		1,2,4,5-Tetrachlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
		1,2,3-Trichlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
		1,2,4-Trichlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
		2,4,5-Trichlorotoluene	●●●		●●●	●●●	●●●	●●●	●●●
		Hexachlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
		Hexachlorobutadiene	●●●		●●●	●●●	●●●	●●●	●●●
		Hexachlorocyclopentadiene	●●●		●●●	●●●	●●●	●●●	●●●
		Hexachloroethane	●●●		●●●	●●●	●●●	●●●	●●●
		Octachlorostyrene	●●●		●●●	●●●	●●●	●●●	●●●
		Pentachlorobenzene	●●●		●●●	●●●	●●●	●●●	●●●
25	Solvent Extractables	Oil and grease	●●●	●●●	●●●	●●●	●●●	●●●	●●●
27	PCBs	PCBs (Total)						●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE R - ROHM AND HAAS CANADA INC. (MORRISBURG)

		EFFLUENT STREAM:	PR 0200				CO 0100				ST 0300
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED									
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●			●●●
6	Total phosphorus	Total phosphorus				●●●			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●			●●●
		Volatile suspended solids (VSS)									
9	Total metals	Aluminum				●●●				●●●	●●●
		Beryllium				●●●				●●●	●●●
		Boron				●●●				●●●	●●●
		Cadmium				●●●				●●●	●●●
		Chromium				●●●				●●●	●●●
		Cobalt				●●●				●●●	●●●
		Copper				●●●				●●●	●●●
		Lead				●●●				●●●	●●●
		Molybdenum				●●●				●●●	●●●
		Nickel				●●●				●●●	●●●
		Silver				●●●				●●●	●●●
		Thallium				●●●				●●●	●●●
		Vanadium				●●●				●●●	●●●
		Zinc				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE R - ROHM AND HAAS CANADA INC. (MORRISBURG)

		EFFLUENT STREAM:	PR 0200				CO 0100				ST 0300
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED									
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●					●●●	●●●
15	Sulphide	Sulphide				●●●				●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●	
		1,1,2-Trichloroethane				●●●				●●●	
		1,1-Dichloroethane				●●●				●●●	
		1,1-Dichloroethylene				●●●				●●●	
		1,2-Dichlorobenzene				●●●				●●●	
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●	
		1,2-Dichloropropane				●●●				●●●	
		1,3-Dichlorobenzene				●●●				●●●	
		1,4-Dichlorobenzene				●●●				●●●	
		Bromodichloromethane				●●●				●●●	
		Bromoform				●●●				●●●	
		Bromomethane				●●●				●●●	
		Carbon tetrachloride				●●●				●●●	
		Chlorobenzene				●●●				●●●	
		Chloroform				●●●				●●●	
		Chloromethane				●●●				●●●	
		Cis-1,3-Dichloropropylene				●●●				●●●	
		Dibromochloromethane				●●●				●●●	
		Ethylene dibromide				●●●				●●●	
		Methylene chloride				●●●				●●●	
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE R - ROHM AND HAAS CANADA INC. (MORRISBURG)

		EFFLUENT STREAM:	PR 0200				CO 0100				ST 0300
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED									
16	Volatiles, Halogenated (continued)	Trans-1,2-Dichloroethylene				●●●				●●●	
		Trans-1,3-Dichloropropylene				●●●				●●●	
		Trichloroethylene				●●●				●●●	
		Trichlorofluoromethane				●●●				●●●	
		Vinyl chloride (Chloroethylene)				●●●				●●●	
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●	
		Ethylbenzene				●●●				●●●	
		Styrene				●●●				●●●	
		Toluene				●●●				●●●	
		o-Xylene				●●●				●●●	
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●	
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●					
		1,2,3,5-Tetrachlorobenzene				●●●					
		1,2,4,5-Tetrachlorobenzene				●●●					
		1,2,3-Trichlorobenzene				●●●					
		1,2,4-Trichlorobenzene				●●●					
		2,4,5-Trichlorotoluene				●●●					
		Hexachlorobenzene				●●●					
		Hexachlorobutadiene				●●●					
		Hexachlorocyclopentadiene				●●●					
		Hexachloroethane				●●●					
		Octachlorostyrene				●●●					
		Pentachlorobenzene				●●●					
25	Solvent Extractables	Oil and grease			●●●				●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

		EFFLUENT STREAM:	CO 0400				CO 0600				CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
2	Total cyanide	Total cyanide			●●●				●●●				●●●				●●●	
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium				●●●				●●●				●●●				●●●
		Total Kjeldahl nitrogen				●●●				●●●				●●●				●●●
4b		Nitrate + Nitrite				●●●				●●●				●●●				●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum				●●●				●●●				●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Boron				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		EFFLUENT STREAM:	CO 0400				CO 0600				CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●
		Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
12	Mercury	Mercury				●●●				●●●				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●					●●●			●●●						●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane																
		1,1,2-Trichloroethane																
		1,1-Dichloroethane																
		1,1-Dichloroethylene																
		1,2-Dichlorobenzene																
		1,2-Dichloroethane (Ethylene dichloride)																
		1,2-Dichloropropane																
		1,3-Dichlorobenzene																
		1,4-Dichlorobenzene																
		Bromodichloromethane																
		Bromoform																
		Bromomethane																
		Carbon tetrachloride																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		EFFLUENT STREAM:	CO 0400				CO 0600				CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				50 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene																
		Chloroform																
		Chloromethane																
		Cis-1,3-Dichloropropylene																
		Dibromochloromethane																
		Ethylene dibromide																
		Methylene chloride																
		Tetrachloroethylene (Perchloroethylene)																
		Trans-1,2-Dichloroethylene																
		Trans-1,3-Dichloropropylene																
		Trichloroethylene																
		Trichlorofluoromethane																
		Vinyl chloride (Chloroethylene)																
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●				●●●
		Ethylbenzene				●●●				●●●				●●●				●●●
		Styrene				●●●				●●●				●●●				●●●
		Toluene				●●●				●●●				●●●			●●●	
		o-Xylene				●●●				●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●				●●●				●●●				●●●
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol												●●●				
		2,3,4,6-Tetrachlorophenol												●●●				
		2,3,5,6-Tetrachlorophenol												●●●				
		2,3,4-Trichlorophenol												●●●				
		2,3,5-Trichlorophenol												●●●				
		2,4,5-Trichlorophenol												●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

		EFFLUENT STREAM:	CO 0400				CO 0600				CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days				60 days				60 days				60 days			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol												●●●				
		2,4-Dimethyl phenol												●●●				
		2,4-Dinitrophenol												●●●				
		2,4-Dichlorophenol												●●●				
		2,6-Dichlorophenol												●●●				
		4,6-Dinitro-o-cresol												●●●				
		2-Chlorophenol												●●●				
		4-Chloro-3-methylphenol												●●●				
		4-Nitrophenol												●●●				
		m-Cresol												●●●				
		o-Cresol												●●●				
		p-Cresol												●●●				
		Pentachlorophenol												●●●				
		Phenol												●●●				
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin																●●●
		Octachlorodibenzo-p-dioxin																●●●
		Octachlorodibenzofuran																●●●
		Total heptachlorinated dibenzo-p-dioxins																●●●
		Total heptachlorinated dibenzofurans																●●●
		Total hexachlorinated dibenzo-p-dioxins																●●●
		Total hexachlorinated dibenzofurans																●●●
		Total pentachlorinated dibenzo-p-dioxins																●●●
		Total pentachlorinated dibenzofurans																●●●
		Total tetrachlorinated dibenzo-p-dioxins																●●●
		Total tetrachlorinated dibenzofurans																●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

EFFLUENT STREAM:			CO 0400				CO 0600				CO 0700				CO 0800				
TOXICITY TESTS REQUIRED:			Yes				Yes				Yes				Yes				
CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):			Quarterly				Quarterly				Quarterly				Quarterly				
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days				60 days				60 days				60 days				
CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:			Quarterly				Quarterly				Quarterly				Quarterly				
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days				60 days				60 days				60 days				
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																	
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

EFFLUENT STREAM:			CO 0900				OT 0100	OT 0200	OT 0300
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	Yes
CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
2	Total cyanide	Total cyanide			●●●				
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium				●●●	●●●	●●●	●●●
		Total Kjeldahl nitrogen				●●●	●●●	●●●	●●●
4b		Nitrate + Nitrite				●●●	●●●	●●●	●●●
5a	Organic carbon	Dissolved organic carbon (DOC)	●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)							
9	Total metals	Aluminum				●●●	●●●	●●●	●●●
		Beryllium				●●●	●●●	●●●	●●●
		Boron				●●●	●●●	●●●	●●●
		Cadmium				●●●	●●●	●●●	●●●
		Chromium				●●●	●●●	●●●	●●●
		Cobalt				●●●	●●●	●●●	●●●
		Copper				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

EFFLUENT STREAM:			CO 0900				OT 0100	OT 0200	OT 0300
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	Yes
CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
9	Total metals (continued)	Lead				●●●	●●●	●●●	●●●
		Molybdenum				●●●	●●●	●●●	●●●
		Nickel				●●●	●●●	●●●	●●●
		Silver				●●●	●●●	●●●	●●●
		Thallium				●●●	●●●	●●●	●●●
		Vanadium				●●●	●●●	●●●	●●●
		Zinc				●●●	●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●	●●●	●●●
12	Mercury	Mercury				●●●	●●●	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●		●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●			
		1,1,2-Trichloroethane				●●●			
		1,1-Dichloroethane				●●●			
		1,1-Dichloroethylene				●●●			
		1,2-Dichlorobenzene				●●●			
		1,2-Dichloroethane (Ethylene dichloride)				●●●			
		1,2-Dichloropropane				●●●			
		1,3-Dichlorobenzene				●●●			
		1,4-Dichlorobenzene				●●●			
		Bromodichloromethane				●●●			
		Bromoform				●●●			
		Bromomethane				●●●			
		Carbon tetrachloride				●●●			

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

EFFLUENT STREAM:			CO 0900				OT 0100	OT 0200	OT 0300
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	Yes
CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●			
		Chloroform				●●●			
		Chloromethane				●●●			
		Cis-1,3-Dichloropropylene				●●●			
		Dibromochloromethane				●●●			
		Ethylene dibromide				●●●			
		Methylene chloride				●●●			
		Tetrachloroethylene (Perchloroethylene)				●●●			
		Trans-1,2-Dichloroethylene				●●●			
		Trans-1,3-Dichloropropylene				●●●			
		Trichloroethylene				●●●			
		Trichlorofluoromethane				●●●			
		Vinyl chloride (Chloroethylene)				●●●			
17	Volatiles, Non-Halogenated	Benzene				●●●	●●●	●●●	●●●
		Ethylbenzene				●●●	●●●	●●●	●●●
		Styrene				●●●	●●●	●●●	●●●
		Toluene		●●●			●●●	●●●	●●●
		o-Xylene				●●●	●●●	●●●	●●●
		m-Xylene and p-Xylene (NOTE 4)				●●●	●●●	●●●	●●●
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol							
		2,3,4,6-Tetrachlorophenol							
		2,3,5,6-Tetrachlorophenol							
		2,3,4-Trichlorophenol							
		2,3,5-Trichlorophenol							
		2,4,5-Trichlorophenol							

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		EFFLUENT STREAM:	CO 0900				OT 0100	OT 0200	OT 0300
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	Yes
		CHARACTERIZATION SAMPLING FREQUENCY (except for ATG 24):	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		CHARACTERIZATION SAMPLING FREQUENCY FOR ATG 24:	Quarterly				None	None	None
		CHARACTERIZATION SAMPLING MINIMUM INTERVAL:	60 days						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol							
		2,4-Dimethyl phenol							
		2,4-Dinitrophenol							
		2,4-Dichlorophenol							
		2,6-Dichlorophenol							
		4,6-Dinitro-o-cresol							
		2-Chlorophenol							
		4-Chloro-3-methylphenol							
		4-Nitrophenol							
		m-Cresol							
		o-Cresol							
		p-Cresol							
		Pentachlorophenol							
		Phenol							
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin							
		Octachlorodibenzo-p-dioxin							
		Octachlorodibenzofuran							
		Total heptachlorinated dibenzo-p-dioxins							
		Total heptachlorinated dibenzofurans							
		Total hexachlorinated dibenzo-p-dioxins							
		Total hexachlorinated dibenzofurans							
		Total pentachlorinated dibenzo-p-dioxins							
		Total pentachlorinated dibenzofurans							
		Total tetrachlorinated dibenzo-p-dioxins							
		Total tetrachlorinated dibenzofurans							

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

EFFLUENT STREAM:			CO 0900				OT 0100	OT 0200	OT 0300
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	Yes
CHARACTERIZATION SAMPLING FREQUENCY (except for AT6 24):			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
CHARACTERIZATION SAMPLING FREQUENCY FOR AT6 24:			Quarterly				None	None	None
CHARACTERIZATION SAMPLING MINIMUM INTERVAL:			60 days						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	11
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
25	Solvent Extractables	Oil and grease			●●●		●●●	●●●	●●●

PART D

EXPLANATORY NOTES TO THE EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

EXPLANATORY NOTES - EFFLUENT MONITORING - ORGANIC CHEMICAL MANUFACTURING SECTOR REGULATION
(Ontario Regulation 209/89)

Introduction

The Explanatory Notes provide, where appropriate, additional information and interpretation for each of the sections in the **Effluent Monitoring - Organic Chemical Manufacturing Sector** Regulation (hereafter referred to as the **OCM Sector Regulation**) to clarify the regulation requirements.

The OCM Sector Regulation is made up of eighteen sections encompassing definitions, purpose, application, selection of sampling points, monitoring requirements, quality control, toxicity testing, flow measurement, reporting and in-force timing and duration.

Pipe-specific monitoring schedules, listing the chemical parameters and their monitoring frequency for each plant site form an integral part of the Regulation.

The OCM Sector Regulation references the **Effluent Monitoring - General** Regulation (**Ontario Regulation 695/88**), hereafter referred to as the **General Regulation**, for the "how to" aspects of the monitoring requirements.

Section 1: Definitions

Since the OCM Sector Regulation is filed under the **Environmental Protection Act**, definitions in the Act apply and are therefore not redefined in the Regulation.

Definitions in section 1 of the General Regulation, if they are not redefined in the OCM Sector Regulation, also apply to the Sector Regulation.

Definitions are intended to clarify:

- terms having several possible interpretations
- technical terms which may not be in common use
- terms which have a different meaning in the Regulation than those found in a dictionary or through common use
- terms used differently in the OCM Sector Regulation from those in the General Regulation
- terms specific to the OCM Sector Regulation

The following definitions in the OCM Sector Regulation supesede their counterparts in the General Regulation:

- characterization
- combined effluent

Characterization has been redefined in the Sector Regulation to reference the OCM Sector characterization list which is specific to the OCM Sector

Combined effluent has been redefined to include, as components, process materials in addition to process effluents.

The following definitions appear in the OCM Sector Regulation rather than in the General Regulation because they are specific to the OCM Sector:

- final discharge sampling point
- process change
- quarterly
- semi-annual period
- semi-annually

Section 2: Purpose

The purpose of the OCM Sector Regulation is to establish over a twelve month period a data base on effluent quality for each of the plants in the OCM Sector. The data base will be used to develop effluent limits for the Sector.

Section 3: Application

The OCM Sector Regulation applies to the nineteen direct discharger plants listed. Additional direct dischargers can be brought under the OCM Sector Regulation by amending this section.

Each direct discharger plant is linked to a site-specific monitoring schedule as detailed in this section. The site-specific monitoring schedules for each discharger's plant identify the effluent streams to be monitored by stream type and MISA control point number. The coding of the streams was undertaken at the request of the Sector companies to better protect proprietary process information.

Subsections (3) and (4) establish the link between the OCM Sector Regulation and the "how to" requirements of the General Regulation by stating explicitly that the monitoring obligations are to be carried out in accordance with the General Regulation.

Subsection (5) references six additional compounds that are to be added to the OCM Sector List for monitoring. These compounds were not listed in the General Regulation Schedules because they have been recently added to the Effluent Monitoring Priority Pollutants List (EMPPL) or they have been on the

EMPPL but h ·ve just had analytical protocols developed for them. Reference is made to how the compounds are to be collected and analyzed through the addition of footnotes A to F in Schedule AA of the OCM Regulation. All six compounds fit within the current analytical test group framework.

Subsection (6) allows the requirements of the OCM Sector and the General Regulation to be discharged by a second party working on behalf of the direct discharger. Thus, a consultant or laboratory can be used by the discharger to carry out any or all of the requirements under the Regulation.

In cases of duplication of monitoring requirements, it is the intent of the Ministry that the MISA Regulation requirements shall replace for the duration of the Regulation, any monitoring requirements for the same effluents under Certificates of Approval or Control Orders. This override will not extend to any effluent stream not monitored in the Regulation or for which monitoring is required to assess the performance of treatment systems or processes.

Section 4: Sampling Points

Subsections (1) and (2) require that each direct discharger establish and use the sampling points on the effluent streams listed in the site-specific monitoring schedule for each discharger's plant. Alternate sampling points can only be used if they are acceptable to the Director.

Effluent streams, designated for monitoring in the site-specific schedule for each discharger's plant, which combine prior to discharge, must be sampled on the same day. This will provide a comparison of the analytical results for each constituent effluent stream with those for the combined stream for a mass balance check.

Separate stand alone process, combined and batch discharge effluent streams may be sampled at the respective specified frequencies on different days within the month. The intent is to allow a more uniform distribution of the sampling workload at sites with a large number of streams.

Same day sampling of as many streams as possible is encouraged in order to better relate the contaminant concentrations in the different streams and to allow the calculation of loading rates for the whole plant site at a given point in time.

Once-through cooling water streams originating from the same process block or area should be sampled on the same day each month as are the process, combined or batch discharge effluents from the same block.

Subsection (5) requires that composite samples at each process and combined effluent sampling point be taken by methods defined in section 3(4) of the General Regulation.

Subsections (6) and (7) allow each direct discharger to deviate from the minimum sample volumes specified in Column 5 of Schedule 2 of the General Regulation. Sample volumes other than those specified may be submitted

provided that the analytical laboratory has demonstrated using those volumes that it can meet at least the analytical method detection limits that are specified in Column 6 of Parts A and B of Schedule 3 of the General Regulation.

A minimum sample volume of four litres is required for the analysis of analytical test group 24 (chlorinated dibenzo-p-dioxins and dibenzofurans).

Section 5: Characterization

Quarterly and semi-annual characterization sampling frequencies including minimum sampling intervals for each process, combined and batch discharge effluent stream are specified in the site-specific monitoring schedule for each discharger's plant.

The minimum interval between successive samplings is specified to ensure that the samples are more representative of discrete events and to provide an indication of seasonal impacts on the effluents.

The characterization sampling frequencies are split into two requirements - sampling frequencies for all analytical test groups except group 24 (chlorinated dibenzo-p-dioxins and dibenzofurans) and for analytical test group 24.

Subsection (4) requires that all of the characterization samples be analyzed for all of the analytical test groups as shown in Schedule AA of the OCM Sector Regulation.

An exemption to the requirements of subsection (4) is provided where the site-specific characterization sampling frequencies for the two analytical requirements differ. In such cases, the characterization sample need only be analyzed either for all analytical test groups except group 24 or for group 24 depending on the purpose of the stated sampling requirement in the site-specific monitoring schedule.

Subsection (5) requires that the collection of the characterization samples at a given sampling point for the two analytical requirements be done on the same day where the specified sampling frequencies coincide.

Subsection (2) links the characterization samples to the provision in subsection 4(3) of the General Regulation which excludes the use of alternate instrumental measurement method principles for these samples.

Subsection (8) requires that each sample collected at the characterization sampling frequencies specified in the site-specific monitoring schedules for each discharger's plant also undergo open characterization as defined under the definitions section in the General Regulation and in accordance with the requirements of Schedule 3, Part C of the General Regulation.

Open characterization is intended to identify compounds or elements not currently on the EMPPL.

In cases where the in-force date of the Regulation does not coincide with the beginning of a quarter or a semi-annual period, the twelve month monitoring requirement will span five calendar quarters or three calendar semi-annual periods. However, only four or two characterization samplings are required to match the respective quarterly or semi-annual frequency requirements as specified in the site-specific monitoring schedules for each discharger's plant.

Subsection (1)(b) requires that a set of samples for characterization be collected from each process, combined and batch discharge effluent sampling point after every process change that is expected to adversely impact the quality of the effluent at that sampling point.

Analysis of the following analytical test groups is required for characterization:

Group 1	Chemical Oxygen Demand (COD)
Group 2	Cyanide
Group 3	Hydrogen ion (pH)
Group 4a	Ammonia plus Ammonium/Total Kjeldahl nitrogen
Group 4b	Nitrate + Nitrite
Group 5a	Dissolved Organic Carbon (DOC)
Group 5b	Total Organic Carbon (TOC) (if TSS > 15 mg/L)
Group 6	Total Phosphorus
Group 7	Specific conductance
Group 8	Total/Volatile Suspended Solids (TSS/VSS)
Group 9	Total metals
Group 10	Hydrides
Group 11	Chromium (Hexavalent) (if Total Cr > 1 mg/L)
Group 12	Mercury
Group 13	Total alkyl lead (if Total Pb > 1 mg/L)
Group 14	Phenolics (4AAP)
Group 15	Sulphide
Group 16	Volatiles, Halogenated
Group 17	Volatiles, Non-Halogenated
Group 18	Volatiles, Water Soluble
Group 19	Extractables, Base Neutral
Group 20	Extractables, Acid (Phenolics)
Group 23	Extractables, Neutral Chlorinated
Group 24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans
Group 25	Solvent Extractables
Group 27	PCBs (Total)

COD is a requirement for characterization but not for routine monitoring. It has been included to provide a comparison with DOC and to give an indication of the presence of non-organic oxidizable material.

Analytical test groups 21 (Extractables, Phenoxy Acid Herbicides) and 22 (Extractables, Organochlorine Pesticides) are excluded from characterization because they are not listed on the EMPPL and the group members are currently not manufactured in Ontario. Also excluded from characterization are analytical test groups 26a (Fatty Acids) and 26b (Resin Acids) for which there are no validated analytical protocols at this time.

Analytical data from daily, thrice weekly, weekly and monthly sampling may be used toward fulfilling the characterization requirements, provided that all samples at a given sampling point are taken on the same day and only the instrumental measurement method principles listed in Column 4 of Schedule 3, Parts A and B are followed.

Routine Monitoring

The requirements for routine monitoring of effluents are specified in sections 6 through 13 of the OCM Sector Regulation.

All routine monitoring samples must be collected and analyzed according to the principles and protocols outlined in sections 3 and 4 of the General Regulation for sampling and analysis respectively.

Daily, thrice weekly, weekly and monthly monitoring requirements apply only to process, combined and batch discharge effluent streams. Once-through cooling water, storm water and waste disposal site effluent streams require only monthly monitoring. Emergency overflows are monitored on an event basis.

Section 6: Daily Monitoring

The parameters for daily monitoring are indicated in the daily column in the site-specific monitoring schedule for each discharger's plant.

Subsection (1) requires that all process, combined or batch discharge effluent sampling points which are also final discharge sampling points be monitored for the following analytical test groups either by using on-line analyzers or by analyzing composite samples:

Group 3	Hydrogen ion (pH)
Group 5a	Dissolved Organic Carbon (DOC)
Group 7	Specific conductance

It is preferable that these parameters be monitored continuously using on-line analyzers to provide a record of the variability of the final discharges.

Specific conductance must be reported at 25 degrees C. A conversion chart may have to be developed for each sampling point to provide a temperature correction.

In cases where on-line analyzers or composite samplers cannot be used on a final discharge stream due to physical or practical limitations, subsection (2) requires that each of the constituent streams be monitored for the daily parameters.

Requests to use on-line analyzers for monitoring parameters other than pH, DOC or specific conductance must be submitted with supporting technical data to the Ministry for approval.

Subsection (4) exempts samples from analysis for analytical test groups 3, 5a and 7 if those analyses are being done under subsection (1).

Subsection 4(12) of the General Regulation requires that, from each sampling point where an on-line analyzer is used, a monthly sample be collected and analyzed in the laboratory for the specific on-line analyzer measured parameters. This will provide an indication of the accuracy of the on-line analyses by providing an average value for the range of data recorded by the on-line analyzer.

Subsection (5) exempts the direct discharger from the daily monitoring requirements at a given sampling point if there is insufficient volume because of the collection of inspection samples at that point by the Ministry.

Section 7: Thrice-Weekly Monitoring

The parameters for thrice-weekly monitoring are indicated in the thrice-weekly column in the site-specific monitoring schedule for each discharger's plant.

The minimum thrice weekly monitoring requirement is:

Group 5a	Dissolved Organic Carbon (DOC)
Group 5b	Total Organic Carbon (TOC) (if TSS> 15 mg/L)
Group 8	Total Suspended Solids (TSS)

Additional parameters for thrice-weekly monitoring are site-specific and are based on their previous detection above levels of concern in the specific effluents as explained in the OCM Regulation Development Document.

Section 8: Weekly Monitoring

The parameters for weekly monitoring are indicated in the weekly column in the site-specific monitoring schedule for each discharger's plant.

The minimum weekly monitoring requirement is:

Group 6	Total phosphorus
Group 25	Solvent Extractables (Oil & Grease)

Additional parameters for weekly monitoring are site-specific and are based on their previous detection in the specific effluents as explained in the OCM Regulation Development Document.

Subsection (2) requires that the weekly sample be collected on the same day as one of the thrice-weekly samples from the same sampling point to provide as complete a set of monitoring data on a given day as possible.

To increase sample randomness, a minimum of two days between the collection of any two consecutive weekly samples from a given sampling point is required by subsection (3). The preferred weekly sampling interval is seven days.

Section 9: Monthly Monitoring

The parameters for monthly monitoring are indicated in the monthly column in the site-specific monitoring schedule for each discharger's plant.

Monthly analysis may be required for any or all of the following analytical test groups based on effluent-specific considerations as outlined in the OCM Regulation Development Document:

Group 2	Cyanide
Group 4a	Ammonia plus Ammonium/Total Kjeldahl nitrogen
Group 4b	Nitrate + Nitrite
Group 9	Total metals
Group 10	Hydrides
Group 11	Chromium (Hexavalent)(only if Total Cr >1 mg/L)
Group 12	Mercury
Group 13	Total alkyl lead
Group 14	Phenolics (4AAP)
Group 15	Sulphide
Group 16	Volatiles, Halogenated
Group 17	Volatiles, Non-Halogenated
Group 18	Volatiles, Water Soluble
Group 19	Extractables, Base Neutral
Group 20	Extractables, Acid (Phenolics)
Group 23	Extractables, Neutral Chlorinated
Group 24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans
Group 27	PCBs (Total)

A minimum interval of two weeks between the collection of any two successive monthly samples is required to provide independent samples over as wide a range of operating conditions as possible.

Monthly samples must be collected on the same day as the weekly samples from the same effluent sampling point to provide as complete a set of analytical data on a given day as possible.

Section 10: Monthly Monitoring - Once-Through Cooling Water

Where a once-through cooling water sampling point has been designated for a discharger, parameters for monthly monitoring are indicated in the site-specific monitoring schedule for that discharger's plant.

The once-through cooling water samples must be collected on the same day as monthly process, combined and batch discharge effluent samples.

Where the monthly process, combined and batch discharge effluent samples are taken on different days in the month, the once-through cooling water samples for a given sampling point need only be taken once that month on a day when effluent samples from effluents are collected from the same process block or general process area. This will provide a more complete indication of plant or process operations at the same point in time.

A minimum interval of two weeks between the collection of successive monthly samples is required for the same reasons as discussed under Section 9.

Section 11: Monthly Monitoring - Storm Water

Where storm water sampling points have been designated for a discharger, monthly monitoring of storm water discharges is required for storm events with rainfall in excess of 5 millimetres over a 24 hour period. Included is a requirement for monitoring the discharge during at least two thaw periods during the winter months. The parameters for monitoring are indicated in the site-specific monitoring schedule for that discharger's plant.

In cases where samples cannot be collected from a storm water sampling point because of a lack of sufficient volume of discharge, a compensating set of samples from a separate storm event or thaw must be collected. A total of twelve data points are required over the regulation period.

Subsection (3) requires that a reasonable effort be made to collect at least two storm water samples from thaws with at least a two week interval between the thaw storm water collections to ensure as much as possible that separate events are being monitored.

Samples during winter thaw periods are needed to determine the impact of contamination from melting snow and ice.

Stormwater samples should be collected towards the beginning of the discharge in order to catch the "first flush" effects.

In cases where a retention basin is available to provide holdup, a sample representative of the contents may be collected directly prior to discharge.

The parameter list for storm water analysis is site-specific and reflects the potential contamination on the basis of chemicals used or produced in the storm water drainage areas.

Section 12: Monthly Monitoring - Waste Disposal Site Effluent

Where waste disposal site effluent sampling points have been designated for a discharger, monthly monitoring is required. Where discharges are controlled at intervals greater than one month, monitoring is only required at the time of discharge.

The sampling information discussed under the stormwater section also applies to this section. The parameter list for waste disposal site effluent analysis is site-specific and reflects to a large extent chemicals known to have been placed in the disposal site.

Section 13: Event Monitoring - Emergency Overflow

Where emergency overflow effluent sampling points have been designated for a discharger, monitoring is required of each overflow for the parameters indicated in the site-specific schedule for that discharger's plant.

Monitoring parameters are specified on the basis of known process parameters which could be present in the overflow.

Section 14: Quality Control Monitoring

This section requires monthly and quarterly collection of the following three types of field quality control samples:

- duplicates
- travelling blanks
- travelling spiked blanks

A duplicate sample will provide a measure of the reproducibility of sampling techniques used at the site including the cleanliness of the sample containers.

A travelling blank sample will provide an indication of any problems with sample contamination due to extraneous volatile fractions of contaminants in the atmosphere or due to any contaminant introduction by handling of the sample containers. Travelling blank samples need not be analyzed for analytical test groups 1 (COD), 3 (pH) and 8 (TSS/VSS).

A travelling spiked blank sample will provide an indication of the degree of degradation of the target parameters from the time of sampling to the time of analysis. This in turn may indicate degradation of the target parameters in the regular effluent sample itself. Only analytical test groups 16 to 20, 23, 24 and 27 are to be analyzed because they are the most likely to be affected by volatilization or degradation in the unpreserved solution.

Travelling spiked blanks are not required for the conventional pollutants and metals. Inorganic parameters in samples are stable. In addition, most of the samples are either preserved or are analyzed within a short time period.

Subsections (1) to (4) outline the selection procedure for each discharger's plant for the process or combined effluent stream which is to undergo field quality control monitoring. The stream is chosen on the basis of having the longest monthly parameter list in the following analytical test groups:

Group 16	Volatiles, Halogenated
Group 17	Volatiles, Non-Halogenated

Group 18	Volatiles, Water Soluble
Group 19	Extractables, Base Neutral
Group 20	Extractables, Acid (Phenolics)
Group 23	Extractables, Neutral Chlorinated
Group 24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans
Group 27	PCBs (Total)

A combined effluent stream is to be selected only if there is no process effluent stream meeting the above criteria.

If there are no process or combined effluent streams with parameters designated for monitoring in any of the above groups, then the effluent stream selection can be made on the basis of the largest number of the remaining parameters with process effluents taking precedence over combined effluents.

Each travelling spiked blank sample is to be prepared with a standard solution which contains all of the parameters in the analytical test groups for which the routine sample is normally analyzed.

For the purpose of providing a duplicate sample when automatic composite samplers are used, either the taking of aliquots from the collected samples or sample splitting is permitted. A second sampler for obtaining duplicates is not required. However, separate containers must be used to collect the duplicate samples for analytical test group 25 (solvent extractables).

Subsections (7), (9) and (12) require that duplicate, travelling blank and spiked travelling blank samples respectively be taken monthly on the same day as the regular monthly samples from the sampling point of the stream selected for quality control and that each sample be analyzed for the parameters required to be routinely analyzed at the daily and thrice weekly frequency for that sampling point.

Similarly, subsections (8), (11) and (13) require that quality control samples as above be taken quarterly on the same day as the monthly quality control samples from the same sampling point and that they be analyzed for the parameters required to be routinely analyzed at the weekly and monthly frequency for that sampling point.

Travelling blanks need not be analyzed for pH and TSS/VSS. No relevant pH information can be obtaineded on a travelling blank of distilled water. To analyze TSS/VSS, gross contamination would be required for it to be detected at ppm levels.

Additional laboratory quality control samples are to be analyzed and prepared by each laboratory as outlined in Section 4 of the General Regulation. This quality control data will provide an indication of analytical variability due to laboratory procedures.

Section 15: Toxicity Testing

Section 5 of the General Regulation specifies the test protocols which must be followed for the fish toxicity test and the Daphnia magna acute lethality toxicity test.

Under the OCM Sector Regulation, toxicity test samples are to be collected only at process, combined or batch discharge effluent sampling points which are also final discharge sampling points.

The samples must be collected on the same day as the monthly chemical monitoring samples for the same effluent stream in order to aid in the interpretation and possible correlation of the chemical analyses with the results of the biological tests.

Effluent samples used for the fish toxicity and Daphnia magna tests are to be taken from the same sample container or set of containers in order to minimize the likelihood of sample differences.

An exemption to pass/fail fish testing on undiluted effluent is granted in the case where the first three consecutive monthly LC50 fish toxicity tests show fish mortality no greater then 20% of the population at each concentration in the serial dilutions.

If a pass/fail test results in fish mortality higher than 20%, then full LC50 fish toxicity tests must be performed at least for the next three months.

Subsequently, if fish mortality at each concentration in the serial dilutions over three consecutive monthly tests does not exceed 20%, pass/fail tests may be resumed. If at any test concentration, the 20% survival criterion is not met, the fish toxicity test requirement reverts to three consecutive monthly LC50 tests.

It is not unusual for one fish in a serial dilution sample to suffer mortality due to natural causes. Therefore, mortality greater than two fish in most cases would be an indication of possible effluent lethality.

The allowance to pass/fail testing does not apply to the Daphnia magna test. Substantially less information is available about the effects of the Sector's effluents on Daphnia magna and therefore, a full 12 months of testing is required.

Toxicity tests are also required in each of four quarters for once-through cooling water streams. The toxicity samples must be collected on the same day as the routine monthly monitoring samples for that stream in order to provide a correlation of the chemical analyses with the results of the biological tests.

The initial quarterly test for each once-through cooling water stream is a full LC50 for both fish and Daphnia magna. However, for a given sampling point, a 100% undiluted test solution may be used for subsequent quarterly tests provided that for the initial quarterly and any subsequent test, both the fish

and Daphnia magna mortality is no more than 20% of the population at each effluent concentration.

For a given once-through cooling water sampling point, full serial dilution tests for both fish and Daphnia magna must be reinstated where the 100% undiluted test solution results in mortality greater than 20% of the population of either test species.

Section 16: Flow Measurement

Flow measurement accuracy and frequency requirements are outlined in Section 6 of the General Regulation.

Subsection (1) of the OCM Sector Regulation requires that all process and combined effluent stream flows be continuously monitored.

Process effluents must have installed continuous flow measurement devices capable of an accuracy of ±7%. However, an already installed flow measuring device for a process effluent stream, with a demonstrated accuracy of ±15% over the full range of the device will also be acceptable.

The total daily flow for a combined effluent stream may be estimated to an accuracy of ±20% in cases where there is no continuous flow measurement device on the stream.

In cases of flow device malfunction, process and combined effluent stream flows must be reported on the basis of at least three separate flow estimates over the twenty-four hour sampling period as the total volume discharged per day.

Flows of batch discharge and once-through cooling water streams need to be measured or estimated at the time of each sampling to an accuracy of ±20%

For waste disposal site effluent and emergency overflows, the volume of discharge may be measured or estimated to an accuracy of ±20%

For storm water discharge measurement or estimation, the ±20% accuracy requirement in the General Regulation has been overriden by subsection (6) to allow less accurate flow data provided it is accompanied by an assessment of its accuracy.

Subsections (7) to (10) require that the accuracies for flow measuring devices for process and combined effluent streams be demonstrated either by calibration performed no earlier than one year prior to the promulgation of the OCM Sector Regulation or by the submission of reports certifying that the flow measuring devices have been installed according to recognized standards.

The one year back-dating ensures that relatively up to date calibration information is provided.

In cases where storm water or waste disposal site effluent is collected in a retention basin, the volume discharged may be measured using the change in

level in the basin.

Where the direct discharger is unable to carry out a field calibration on a secondary flow measuring device for a given stream prior to the collection of the first set of samples as required under subsection 7(7) of the General Regulation, the direct discharger is not prevented from taking samples from other streams which have calibrated flow devices.

Section 17: Reporting

Section 7 of the General Regulation outlines the reporting requirements for each direct discharger.

Subsection (1) of the OCM Sector Regulation requires the submission of an Initial Report by July 8, 1989. The contents of the Report are outlined in subsection 7(1) of General Regulation. In addition, a guidance document for completing the Initial Report will be provided to each Sector plant site.

Information submitted in the Initial Report which is considered by the plant to be confidential business information must be identified as such on each page.

The Initial Report is intended to provide information on plant processes with respect to aqueous waste generation, flow and sampling equipment and plant and laboratory procedures to be used to carry out all aspects of the monitoring program under the OCM Sector Regulation. Four copies of the report, including any attachments, should be provided. Any changes to the information submitted in the Initial Report must be submitted in writing to the Director.

The reporting section of the OCM Regulation requires that the sampling dates and results of all analyses required under sections 5 to 14 of the OCM Sector Regulation, including the monthly verification of on-line analyzer performance data as required by section 4(18) of the General Regulation, be reported to the Director on a floppy diskette within the time periods specified in subsection 7(2) of the General Regulation.

All positive numerical values of analytical data at or above the analytical method detection limits calculated by each laboratory performing the analyses must be reported. Results below the laboratory calculated method detection limits may be reported as positive numerical values rather than "less than MDL"

The results of the toxicity testing must be reported within sixty days of sample collection on a floppy diskette accompanied by a signed hard copy report in the format specified in Schedule 4 of the General Regulation.

Flow device accuracy information obtained on the basis of calibration, certification and estimation must be submitted no later than thirty days before its first use for the purposes of the Regulation. The submission deadline in most cases will be September 1, 1989. Similarly subsection (8) requires a description and an assessment of accuracy for the method used to estimate

storm water flow at least thirty days prior to this Regulation coming into force.

The reporting deadlines for flow calibration information provide an additional two month period beyond the deadline for the Initial Report for the plant sites to use to calibrate their flow equipment.

The one month interval between the flow accuracy data submission deadline and the first use of the flow equipment under the Regulation will allow time to make any required modifications to the equipment prior to the start of monitoring.

The calibration of secondary flow measuring devices must be performed prior to the start of monitoring according to subsection 6(7) of the General Regulation. The submission of documentation of such calibration is required no later than thirty days after the OCM Sector Regulation comes into force. The deadline will therefore be October 31, 1989.

Subsection (10) to (15) require the reporting to the Director of rainfall for each storm event and specific flow information for each process effluent, combined, batch discharge, once-through cooling water, storm water, waste disposal site effluent and emergency overflow stream in writing within sixty days after the day on which the information was recorded.

A schedule of the sampling dates and times for monthly and characterization sampling is required thirty days before the sampling is to take place to allow the Ministry to plan any inspection sampling. Prompt notification is required for any changes to the submitted schedule.

Subsection (18) requires the quarterly submission of the quantities of chemicals added to once-through cooling water in the previous quarter. The data will be correlated with actual amounts found in the effluents.

A flow variability report referred to in subsection 3(5) of the General Regulation, is to be submitted by September 30, 1990 for each process effluent stream from which samples were collected other than by means of an automatic flow proportional composite sampling device.

This report will determine if a given process effluent flow is sufficiently variable to require a flow proportional sampler or its equivalent of eight grab samples collected at equal time intervals and combined in proportion to flow. Where applicable, an on-line analyzer may be specified as an alternative to flow proportional sampling for the parameters that can be measured on-line.

Under section 3(6) of the General Regulation, failure to provide this report by the due date would deem the process effluent stream a variable flow stream. Such a stream would require the use of flow proportional sampling or its equivalent within three months of the report's due date. The implementation date would be no later than January 1, 1991.

Subsections (21) to (23) require the keeping of records for all sampling, sampling equipment maintenence and analytical methods used. This would typically include Quality Control documentation, laboratory control charts, instrument calibration and maintenance records, and concentration data for spiked blanks and spiked samples.

Maintenance in the form of periodic calibration of automatic samplers is recommended because of the drift in delivered volumes over a period of time for some types of samplers.

Subsection (24) requires that malfunctions or any other problems which interfere with the carrying out the requirements of both the General and OCM Regulations, and the remedial action taken, be reported within sixty days of their occurrence. The reasons for non-compliance with the requirements, as documented in this report, may be taken into consideration by abatement and enforcement staff investigating an act of non-compliance.

It is prudent to have backup systems available for critical elements to minimize the chances of non-compliance.

Subsection (25) requires that all records under this Regulation be kept for two years after the date of the last report submitted under this Regulation. All records which are required to be kept by this subsection are primarily for inspection purposes to ensure compliance with this Regulation.

Section 18: Timing

The monitoring under the OCM Sector Regulation begins on October 1, 1989 when the OCM Sector Regulation comes into force.

Several sections and subsections of the OCM Regulation come into force on July 1, 1989 to ensure that preparatory work and needed information is in place prior to the start of monitoring. These include the following:

Section 1		Definitions
Section 2		Purpose
Section 3		Application
Subsection 17	(1)	initial report
	(2)	changes to the initial report
	(6)	calibration/certification
	(7)	measurement/estimation of flow
	(8)	measurement/estimation of storm water
	(16)	monthly/characterization sampling schedule
	(17)	changes to schedule

An implementation period of approximately five months from the promulgation date to the in-force date of the Regulation has been provided to allow sufficient time for the the plant sites to purchase and install equipment, negotiate contracts with laboratories, set up their monitoring programs and train personnel.

On October 1, 1990 at the end of the twelve month monitoring period, the following sections and subsections of the OCM Sector Regulation are revoked:

Section 5		Characterization
Sections 7-13		All routine monitoring except daily
Section 15		Toxicity Testing
Subsection 17	(11)	rainfall of each storm event
	(12)	volume of storm discharge
	(13)	volume of waste disposal site effluent

In order to provide continued monitoring during the post-monitoring regulation period before the effluent limits regulation is in place, the daily monitoring requirements for process, combined and batch discharge effluents, as specified in section 6, will remain in force. Only conventional daily parameters will be monitored.

The ongoing daily samples must be collected and analyzed according to the same principles and protocols followed during the twelve month monitoring period. Flow measurement of monitored streams must continue at the accuracy specified in the General Regulation. Reporting of all analytical and flow measurement results is required as specified in the General Regulation.

Characterization and toxicity testing will not continue under this Regulation beyond 12 months.

Sections 4 to 16 of the OCM Regulation, dealing with the establishment of sampling points and the monitoring requirements at each such point, cease to apply to a given sampling point when an approval under subsection 24(1) of the Ontario Water Resources Act is granted to route the effluent stream on which the sampling point is established to treatment or to eliminate the stream completely.

This provision will allow modification of the Regulation monitoring requirements to reflect changes which plant sites may make to their effluent streams during the course of the twelve month monitoring period. Plant sites will not be burdened with legal monitoring requirements for streams which may no longer exist or which have been routed to existing treatment.

Changes which impact on monitoring, other than the two stated in the Regulation, will require an amendment to the OCM Sector Regulation.